sagebrush burning, Beaverhead National Forest, Madison County, Montana



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Beaverhead National Forest



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GRAVELLY SAGEBRUSH



FINAL ENVIRONMENTAL IMPACT STATEMENT



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FINAL ENVIRONMENTAL IMPACT STATEMENT

GRAVELLY SAGEBRUSH BURNING BEAVERHEAD NATIONAL FOREST

Madison County, Montana

Lead Agency:

USDA Forest Service

Responsible Official:

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ABSTRACT

The Madison Ranger District of the Beaverhead National Forest has developed four alternatives for prescribed burning of sagebrush, Douglas-fir encroachment, and aspen in the 161,170 acre West Fork Madison and Antelope Basin study area. The study area is located approximately 35 miles south of Ennis, Montana.

Each alternative responds to environmental issues identified during the analysis process. Alternative 1 would take no action; ongoing administrative and management activities would continue in the project area but no burning would be initiated at this time. Alternative 2 would annually burn approximately 3024 acres per year over a 10 year cycle. An average 50% burned and unburned mosaic will be achieved in the burn areas. Alternative 2 produces the greatest amount of forage over time but is the least responsive of the action alternatives in providing vegetative and landscape diversity. Alternative 3, the Selected Alternative, would burn approximately 1512 acres per year over a 20 year cycle. As with alternative 2, an average 50% burned and unburned mosaic will be achieved in the burn areas. Alternative 3 is designed to increase forage production and maintain a broad range of vegetative and landscape diversities. Alternative 4 would burn approximately 1008 acres per year over a 30 year cycle. As with previous alternatives, an average 50% burned and unburned mosaic will be achieved in the burn areas. Alternative 4 produces the least forage of the action alternatives but does maintain a full range of vegetative and landscape diversities. Alternative 4 will essentially maintain the existing condition of the study area.

Implementation of Alternative 3, the selected alternative, will begin on

AUG 1 9 1991



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SUMMARY



PURPOSE AND NEED

Proposed Action:

The Forest Service proposes to prescribe burn approximately 1512 acres of sagebrush, 120 acres of aspen, and 80 acres of Douglas-fir encroachment habitat each year for the next five years in the West Fork Madison and Antelope Basin areas of the Madison Ranger District of the Beaverhead National Forest. The grazing allotments affected by this proposal are: Bufiox, West Fork, Antelope Basin, Conklin, North Saddle, Hidden Lake, Elk Lake, Elk Mountain, Red Rock, and Horn Mountain. This proposal is part of a long term program of habitat management in this area.

There will be from seven to eleven burn units each year that will range in size from 20 to 625 acres. On an average, each of the burn units will contain a mosaic of approximately 50% burned and 50% unburned resulting in an average of approximately 756 of the 1512 acres actually blackened.

Based upon the analysis summarized in this document, the District Ranger, as the deciding officer, will determine whether to and to what extent the areas will be burned. The alternative selected for implementation and the rationale for its selection will be presented in a Record of Decision.

Purpose and Need for Action:

The proposed action was developed to achieve the goals, objectives and standards of the 1986 Beaverhead Land and Resource Management Plan (Forest Plan). More specifically, the proposal has the following purposes:

The proposed action is designed to maintain the quantities of forage needed to sustain permitted numbers of livestock and meet forage needs of big game.

The 10 grazing allotments currently provide forage for 20,131 Animal Unit Months (AUMs) of livestock

grazing. The sagebrush/grassland community contributes a major portion of the forage sustaining these AUMs and big game populations. This sagebrush/grassland community must be periodically regenerated to maintain the forage production levels needed to support the livestock and big game populations.

The proposal is consistent with forest wide Goal 6 and Objective 1k on pages II-2 and II-8 of the Forest Plan which respectively state: "Provide opportunities for use of forage by domestic livestock at or above current permitted levels of use while protecting or enhancing fishery habitat, riparian areas, recreation and other forest resources." and "The objective for potential permitted AUMs on the Forest will remain at approximately the current level of 190,000 AUMs."

The proposed action is designed to maintain the diversity of wildlife habitats through (1) maintaining a variety of canopy covers in sagebrush/grassland communities, and (2) maintaining a variety of successional stages in aspen.

One purpose of this proposal is to establish and maintain a diversity of habitats for game and non-game species. Habitat diversity will be provided through maintenance of a variety of successional stages and canopy covers in the sagebrush/grassland communities.

Another purpose is to initiate the regeneration of decadent stands of aspen to retain the contribution of aspen as an important element of wildlife habitats and vegetative diversity. There are 5,354 acres of aspen in the area comprised of stands from one half acre to 20 acres in size. The aspen is currently well distributed and conditions range from multilayered and regenerating stands to decadent and non-regenerating stands. Review of past photo and written records indicates that many stands have died out. Field sampling indicates that half of the aspen is in jeopardy of dying out.

This proposal is consistent with forest wide Goal 1 on page II-1 of the Forest Plan which states: "Recognize and promote the intrinsic ecological and economic value of the wildlife and fisheries resources on the Beaverhead National Forest."

and Goal 1a which states: "Provide sufficient diverse habitats to maintain viable populations of all native wildlife species to ensure diversified recreational opportunities and ecological stability."

Scope of the Proposed Action:

This document will also disclose and evaluate the effects of the proposed action on the roadless characteristics and wilderness features of inventoried roadless areas.

There are two inventoried roadless areas in the project area. They are Freezeout Mountain areas 1-029A and 1-029B. See pages C-404 thru C-420 of Appendix C to the Final Environmental Impact Statement for the Forest Plan.

Both of the roadless areas noted here were assigned to non-wilderness management prescriptions. The Geographical Display Areas (GDAs) that present the non-wilderness prescriptions are found on pages IV-85 thru IV-90 of the Forest Plan. There are 18 different assigned MAs in these GDAs of which MA 1, 14, and 24 are involved in this proposal.

In addition, none of the wilderness proposals forwarded by the Montana Congressional Delegation in recent years has recommended the Freezeout Mountain area be added to the National Wilderness Preservation System.

This analysis is the site specific NEPA documentation for a vegetation management proposal to prescribe burn sagebrush, aspen, and Douglas-fir encroachment within the West Fork of the Madison and Antelope Basin Areas. The scope of the proposed action is limited to the burning projects identified in the document. The proposed action is not a general management plan for the area nor is this a programmatic EIS.

This proposal covers approximately 5 years of burning projects in the study areas. These projects are the initial phases of a longer term program of vegetative management that is designed to move toward a desired future condition for the areas. The individual burning projects and alternatives for the 5 year schedule will be presented on a site specific basis as will the discussion of

environmental impacts. These individual projects are ready for a decision on whether to proceed.

By considering these projects as part of the longer term strategy, we are able to focus on short and long term objectives, identify the reasonably foreseeable actions for more distant outyears, display potential cumulative effects, and monitor the success of early projects before additional projects are proposed. Any future projects beyond those specifically identified in this analysis will receive complete analysis and disclosure under the National Environmental Policy Act (NEPA).

ALTERNATIVES

Scoping

The alternatives in this document address the issues, concerns, and opportunities that surfaced during both internal and public scoping sessions. Public meetings were held in Butte on February 5, Ennis on February 6, and Bozeman on February 7 of 1990. A news release describing the proposal was sent to organizations and individuals, and a Notice of Intent to Prepare an Environmental Impact Statement was forwarded to the Office of the Federal Registration on April 17, 1990.

Public involvement in this process continued through December of 1990. This included an on the ground review of the project area with the Montana Department of Fish, Wildlife, and Parks. An invitation for an on the ground review was also sent to several groups that had expressed particular concerns about the proposal.

On April 25, 1991 we held a public meeting in Butte, Montana to review the DEIS and receive questions and concerns. The meeting was attended by approximately 40 people. Representatives from the livestock industry, sportsmans groups and other interested organizations were present. Complete documentation of this meeting is included in the project file.

Comments from the livestock industry were generally supportive of the proposal. Sportsmen and sportsmans groups expressed specific concerns about the impacts of burning on elk calving areas and more general concens about other wildlife species. There were some specific concerns relative to the historically low sage grouse populations. Skyline Sportsman's Association and others were interested in our grazing management strategies. Specific information on the types of grazing systems and rotation schedules that were in place on all the allotments in the project area was provided.

On two occasions we also met with Joel Peterson and Bob Brannon of MDFWP to review our responses to Department comments on the DEIS. One of the areas discussed at length was the Departments concern about the effects of burning on elk calving areas. The Department had specific recommendations to leave 70% unburned sage in the mosaic within calving area burn units. The objectives for the desired mosaic in all burn units in calving areas have been modified to more closely approach the Departments objectives. In general, the modifications I made were to achieve a desired mosaic of 50% to 70% unburned sage within elk calving area units.

ENVIRONMENTAL ISSUES

Issue 1 Wildlife

How will burning affect the habitats of game and non-game species? Can a program of burning be implemented that will improve wildlife habitats in general? How much can be burned, and when will it be burned?

Issue 2 Landscape Diversity

How will landscape diversity be affected by the proposal? How will the area look in the future? Can the burning projects be designed to establish or mimic a more natural condition?

ALTERNATIVES CONSIDERED BUT NOT GIVEN DETAILED STUDY

Aerial Spraying with Herbicides

Aerial spraying with 2-4-D was used extensively in the area in the 1960's and 70's. However, public and Forest Service awareness of the environmental affects of widespread herbicide use has greatly reduced the desirability of this alternative.

The advantage of aerial spraying is the high degree of control it provides for achieving the desired mosaic of treated and untreated areas. This control was not found to outweigh the negative factors of this type of treatment, so the alternative was dropped from further study.

Mechanical Treatment

Mechanical treatment includes activities such as plowing, cabling, or chopping sagebrush with heavy equipment. The advantages of a mechanical treatment are that it provides optimum control over the mosaic of treated and untreated areas and the timing of such treatments are very flexible.

The biggest concern with this alternative is that it creates relatively large areas of disturbed soil, increasing the risk of soil and wind erosion. It is also a very expensive alternative, costing between \$50 and \$60 per acre treated. Because of these concerns, it was dropped from detailed study.

Accelerated Burning Schedule

In this alternative, nearly all the acres designated for eventually treatment would be burned within a five year period. This alternative would provide the greatest increase in forage production by converting the majority of the area into grasses and forbs.

This alternative did not receive detailed study because it did not respond to the stated wildlife and landscape diversity issues.

Natural Fire

The final alternative considered was to allow naturally caused fires to make the desired changes in the vegetation. This alternative would be most responsible to the landscape diversity issue because over time it would re-establish the conditions present before fire control procedures were started.

The problems with this alternative are that it presents a risk to range developments in the area

and the wildfires that start here could spread to adjacent areas, including private property, where fire is not desired. There is also no ability to control the timing of fires under this alternative, and could disrupt other management activities such as scheduled grazing programs.

The Beaverhead Fire Management Plan defines the limits where natural fires can be allowed to burn, and within those limits natural fires will contribute to objectives of this proposal. However, total reliance on natural fires is not appropriate so this alternative was not given detailed study.

ALTERNATIVES CONSIDERED IN DETAIL

Features Common to All Action Alternatives-Specific Features and Mitigation Measures

Wildlife

A 150 foot buffer of unburned sagebrush will be provided around wet meadows.

If Sage Grouse breeding sites (leks) are found (none are known to exist in the area), they will be protected by a 1.5 mile radius unburned buffer.

The Ferruginous hawk, a sensitive species, nests in the upper reaches of the West Fork Madison River. Units will not be burned in the spring if nests are discovered in or within 440 meters of a unit. In addition, those nests will be protected during fall burning so the site is not destroyed.

Units in the upper reaches of the West Fork Madison River will not exceed the 40-60% burned mosaic to protect habitat for prey species of the Ferruginous hawk.

Three units in the Conklin and Elk Lake areas will be burned in the fall to prevent disturbance of Trumpeter Swan and Bald Eagle nest sites.

Within burn units identified as important for elk calving, burns will be designed to achieve a mosaic of 50% to 70% unburned. There are 15 units in which this measure will apply.

Diversity

To establish diversity within individual burn units, burning will be designed to achieve a mosaic of 40-60% burned.

Future burn units will be modified or dropped if natural fires or previous prescribed burns diverge from overall diversity objectives.

In aspen stands, future burns will be dropped and other methods will be used to achieve regeneration if the prescribed burns do not stumulate regeneration as predicted.

If regenerated aspen stands are overbrowsed by livestock or wildlife, the affected stands will be protected by fencing or herding until sprouts are out of reach of browsing animals. If these methods are unsuccessful, remaining aspen will be protected from further burning and other regeneration methods will be studied.

Livestock Management

To ensure that this proposal provides additional forage for wildlife, no increase in livestock numbers will be permitted.

Watershed

To minimize the risk of increased sedimentation of streams, a 50 foot buffer of unburned area will be maintained around streams on slopes of 0-15%. When slopes exceed 15% the unburned buffer will be increased to 100 feet.

Burning Prescriptions

Burning prescriptions are designed to achieve the desired objectives. Spring burns will be accomplished between snow melt and greenup. Scattered patches of snow will remain in the units to help achieve the desired mosaic. Fall burns will be scheduled following 1-2 days of soaking rain to provide high soil moisture content.

To generally protect grasses and forbs, burns will be scheduled before plants break dormancy in the spring, or after they have gone into dormancy in the fall. Climatic factors for both spring and fall burns will be within the following parameters.

Temperature: 45 - 65 degrees Relative Humidity: 25 - 45 %

Wind Speed: 5 - 12 MPH

Air Quality

Burns will be coordinated with the Montana State Airshed Group and Best Available Control Technology (BACT) used to protect against violation of air quality standards.

Monitoring

Sagebrush Mosaic

Post burn walk-throughs and photography will be conducted directly after the burn to developed detailed mapping of burn mosaic for every unit.

Sagebrush Re-establishment

Vegetation transects will be established on selected sites one year after burning and will be reread every five years. The transects will measure the density of sagebrush plants by age class and the total sagebrush canopy cover. At least one transect site will be established each year.

Aspen

Stands will be monitored by a general walk through survey with quick plots to measure aspen sucker numbers and livestock/big game use. Select sites will be measured the first fall after burning and re-measured yearly for three years.

Sage Grouse

An existing program of reporting all sage grouse observations in the area will continue to determine if there are any measurable reactions of the grouse to burning activities.

Elk

The Montana Department of Fish, Wildlife and Parks, in coordination with the District Wildlife

Biologist, will continue a radio location study of elk calving in the area. The study will attempt to monitor the reaction of elk to burning projects and any long term changes in elk movement or calving patterns in the area.

ALTERNATIVE DESCRIPTIONS

Alternative 1 - No Action

Alternative 1 would not initiate any burning in the project area. Forage production in the area would gradually decline under this alternative and vegetation would be late successional stage.

Alternative 2 - 10 Year Burning Cycle

Alternative 2 would conduct mosaic burning on approximately 3024 acres per year over a 10 year cycle. This alternative would provide the greatest increase in forage production and would maintain about 1/3 of the area in early successional stage vegetation.

Alternative 3 - 20 Year Burning Cycle

Alternative 3 would conduct mosaic burning on approximately 1512 acres per year over a 20 year cycle. Forage production would improve over current conditions and a broad spectrum of successional stages would be maintained.

Alternative 4 - 30 Year Burning Cycle

Alternative 4 would conduct mosaic burning on approximately 1008 acres per year over a 30 year cycle. Forage production would be slightly improved over current conditions and a broad spectrum of successional stages would be maintained with an emphasis on late successional stages.

AFFECTED ENVIRONMENT

INTRODUCTION

The project area lies approximately 35 miles south of Ennis, Montana in the Antelope Basin and West Fork Madison areas of the Madison Ranger District. This section describes the existing condi-

tion of the environment and the resources that may be affected by the proposed project.

WILDLIFE

Affected Area

Direct and indirect effects were considered on 42,168 acres of sagebrush communities that encompass the 30,240 acres of projected burning. Cumulative effects were analyzed within the entire Antelope Basin and the southern end of the Gravelly Range in the West Fork Madison area, a total of approximately 161,170 acres.

The area supports diverse wildlife habitats and is dominated by sagebrush/grasslands with patches of aspen and conifers. There are nine lakes found within the area. Big game habitat from spring to fall is provided for mule deer, antelope, elk, and moose. The area also provides habitats for a wide variety of small mammals and songbirds.

Past Management

Livestock grazing has occurred in the area for many decades. Large areas of sagebrush were sprayed in the 60's and 70's to increase forage production. Several thousand acres of wyethia were also sprayed during this time and into the 80's. Recently, burning has been used on mature sagebrush in the area.

The entire area is managed under an area restriction with many specific roads and trails also restricted to motorized use.

Existing Condition

Big Game

Mule deer and antelope use the area in the spring, summer and fall. There is no permanent winter range. Sagebrush is used for cover, but does not appear to be a primary food source. This is probably due to the presence of more palatable, succulent forbs.

The area provides yearlong habitat for moose. In the fall and winter moose are primarily found in the riparian areas. The existing antelope habitat suitability, as described using the U.S. Fish and Wildlife Habitat Suitability Index model, is rated at .65 out of a possible score of 1.00.

Management Indicator Species

Elk calving locations have been mapped by the Montana Fish, Wildlife and Parks. No particularly high concentrations have been identified in Antelope Basin, although the heads of Antelope, Anthill, and Poison Creek seem to be preferred. The West Fork Area has a concentration of calving locations on the south facing breaks between Teepee and Lobo Creek. Past sagebrush spraying and burning projects have shown no adverse effects on elk populations, which are at the desired level for the Gravelley Planning Unit. Elk migrate out of the area to winter, although small herds stay in the West Fork area during mild winters.

Pine marten are found in the area in mixed species stands of mature timber dominated by Englemann spruce and alpine fir. Sagebrush and grassland habitats are not important to pine marten and no effects to pine marten are expected from the burning projects.

Sage grouse appear to have gone through wide fluctuations in the area over the past several decades. Current populations are low and appear stagnant. There is a low amount of brood habitat and a very limited amount of riparian areas, which are important feeding sites. No leks have been located within the drainage. Considering the increasing acreage of sagebrush and the low populations of grouse, it is doubtful that the condition of sagebrush itself is the present limiting factor in grouse populations. The deteriorating condition of the winter range, which is located in Idaho on private lands, is undoubtedly a much more important factor.

Goshawk undoubtedly nest in the conifer stands in the upper reaches of the area, although no nest sites have been found. Goshawks are primarily a forest bird, although they occasionally hunt meadow edges and aspen stands.

Trumpeter swan nest on Conklin and Elk lake, and will winter on Cliff Lake until it freezes over.

The activities of the young are completely restricted to Conklin and Elk lake until after fledging.

Sensitive Species

Sensitive species that may be in the area include the boreal owl, harlequin duck, ferruginous hawk, trumpeter swan, western big-eared bat, and the spotted bat. It is not expected that any of the action alternatives will impact the boreal owl, spotted bat, western big-eared bat, or harlequin duck. The fueruginous hawk are fairly common in the area and feed primarily on rabbits. Nesting preference is trees in shrubland/grassland habitat, but they will nest in stream bottoms or on the ground when trees are not available.

Threatened and Endangered Species

Grizzly bear habitat is excellent in the Gravellies, but because of past human activities the grizzly is considered an incidental user with about one sighting reported every two years. The Gravellies are not listed in a Situation Management Recovery Area. There are several areas that probably have the potential to hold bears for part of the year, but the transportation system and conflicts with grazing would probably be the limiting factors for grizzly bear in the area.

Wolf have regularly been reported in the Gravelly Range, the last being about two years ago. A total of 164 sightings have been reported since 1964 on the Beaverhead National Forest. No pack activity has been reported so the population is probably low and scattered if present at all.

Bald Eagles have been studied around the area lakes since 1988 in an effort to make a nest plan for each of the eagle nest sites. The habitat can probably support up to four nesting pairs of eagles.

Peregrine falcon are occasionally reported in the area, although no nests have been found. Several pairs have been artificially planted nearby and one natural pair nests near the Centennial Valley. Because of these birds and the abundance of waterfowl in the area lakes, there is a good chance of peregrines nesting on the forest now or in the near future.

LANDSCAPE DIVERSITY

Affected Area

The affected area includes all 161,170 acres in the West Fork/Antelope Basin area. The proposed action is confined to 30,240 within 42,168 acres of sagebrush/grassland communities and a small amount of conifer/grass and aspen communities. The areas to be treated are in the southern half of the affected area.

Past Activities

Past activities affecting the natural landscape diversity of the area include livestock grazing, sagebrush and wyethia treatment with herbicides and fire, aspen regeneration treatments, conifer encroachment treatments, and fire suppression.

Existing Condition

Overall landscape diversity in the West Fork/ Antelope Basin is quite high, and includes grasslands, wet meadows, sagebrush/grass slopes, willows, aspen stands, open conifer/grasslands, and dense coniferous forests. The topography is also very diverse, with elevations ranging from 6,000 to 10,000 feet.

The project area, the southern portion of the affected area, is dominated by large open basins and high flat benches of sagebrush/grass and grasslands with scattered patches of dense conifer forests and aspen stands. Canopy cover provides the greatest amount of landscape diversity within the sagebrush/grass areas. Canopy covers in the area are fairly evenly distributed from 0 to 5% canopy cover to over 30% canopy cover. Fire suppression has led to an increase in the acreage and density of conifer stands in the area since the 1940's.

VEGETATION

Affected Area

The proposed action would affect sagebrush/grass, open conifer/grass, and aspen vegetation types within management areas that allow prescribed burns for habitat improvement. Mountain Big

Sagebrush is the dominate sagebrush in the area and is the target species for fire treatment.

Idaho Fescue is the dominate grass species in the area, although many other species are present. There are a very high number of forb species in the area, dominated by Sticky Geranium, Soft Cinquefoil, and Silky Lupine.

About 1622 acres of conifer encroachment, dominated by Douglas-fir, have been identified within burn units. Aspen stands from 1/2 acre clones to 10-20 acres stands are scattered throughout the area. Natural regeneration events, such as fire, are required to maintain many of the aspen sites. Without such regeneration the aspen sites would be naturally replaced by conifer or sagebrush/grass vegetation.

Past Activities

For over 80 years the area has been grazed by livestock. An approved management plan using deferred or rest rotation grazing systems exists for all nineteen allotments in the area. A total of 25,169 AUMs are grazed here.

From 1959 to 1980 about 21,168 acres of sagebrush and 5,520 acres of Wyethia were treated with herbicides. From 1982 to 1988 about 6491 acres of sagebrush were burned in the West Fork/Antelope Basin area. A very limited amount of control on conifer encroachment and aspen regeneration was also done at this time in conjunction with the sagebrush burning. Less then 40 acres of conifers and 50 acres of aspen were treated. In addition, 165 acres of aspen have been treated since 1989 by cutting down mature live trees.

Existing Condition

Vegetation conditions in the area are generally good, although aspens stands conditions are quite varied. There has been close to a 50% decrease in aspen stands since the 1940's, and a 1989 survey of aspen stands in the area identified half of the 258 stands sampled in jeopardy of dying out. There are decadent aspen stands, conifer encroachment, and large expenses of

dense sagebrush that can partially be attributed to the lack of natural fire.

Threatened, Endangered and Sensitive Plants

Three species of sensitive plants have been found in the study area, but none of the sites are located in proposed burning units. Two other species may occur in the sagebrush/grassland habitats, but have not been found in the area.

WATER AND FISH

Affected Area

Portions of the West Fork Madison River, Antelope Creek, and Elk Creek watersheds comprise the affected area for these resources. The streamflows are low and relatively constant, with peak runoff in May and June when streamflow may increase tenfold. Most stream channels are stable, although the main channel of the West Fork has unstable banks along most of its length.

Past Management

Overgrazing of the area prior to the early 1960's led to surface erosion and channel widening on the West Fork. More intensive livestock management practices were introduced in the 1960's and improved watershed conditions to a level that they are maintained today.

ROADLESS AREA

Affected Area

The proposed action will affect the 95,098 acre Freezeout Mountain area, 1-029. This area has been assigned to a mix of resource emphases, with 65% of the area having a range or wildlife emphasis. It includes the Cliff Lake Research Natural Area located in the Antelope Basin area.

Past Management

Past management has emphasized grazing, wildlife, and recreation values. Many miles of fence and numerous water developments, as well two cabins for stockmen, have been constructed for livestock management. Aspen treatments and

spraying and burning of sagebrush have occurred since the 1960's. Since the 1977 RARE II inventory, 2810 acres were removed from roadless designation due to timber harvest and road construction activities.

A system of trails was developed to provide recreation and administrative access, and miles of old "wheel track" roads cross the area. The area is closed to motor vehicles except on designated roads or trails and specific areas that are open to snowmobiles.

This area has not been recommended for wilderness designation in the Forest Plan or in any of the proposed Montana wilderness bills.

Existing Condition

The natural integrity of the area has been heavily impacted by the grazing, fire suppression, and vegetation treatment activities that have been occurring in the area for many years. Man-made elements, such as fences, cabins, etc., have also detracted from the natural integrity.

The overall appearance of the area is quite natural. The cattle and man-made elements seen here are not viewed as significant intrusions, but are expected elements of the setting.

The easy access to the area and open terrain offer minimal opportunities for experiencing a remote setting. Heavy recreation use in the area also limits the opportunities for solitude.

A major portion of the area could be managed as Wilderness. Livestock grazing and range improvements would remain a part of the setting.

LIVESTOCK MANAGEMENT

Affected Area

The proposed action would affect 10 of the 19 allotments in the area.

Past Management

Aerial spraying was done in the 60's and 70's to kill sagebrush. Rest rotation and deferred grazing

systems were implemented in the 60's to improve livestock management.

Existing Condition

All of the allotments are under intensive management systems and have approved Allotment Management Plans. The range conditions of the allotments have an overall rating of good to excellent; however, conditions are changing. Sagebrush canopies are beginning to close and forage production is decreasing.

AIR QUALITY

Affected Area

The project would affect Airshed 7 of the Montana Airshed Group, which includes Beaverhead, Madison, and the southern third of Jefferson Counties.

Past Management

There have been no violations of air quality standards. Wildfires and prescribed burns have occasionally caused local air quality deterioration.

Existing Condition

The ambient air quality is good to excellent. The area has a wind power rating of 6, the highest in the state. Wind speeds should be adequate for dispersion of potential pollutants.

ENVIRONMENTAL CONSEQUENCES

EFFECTS COMMON TO ALL ACTION ALTERNA-TIVES

Wildlife

Moose should benefit from aspen regeneration, but there will probably be no measurable affect on moose populations.

Ruffed and blue grouse should respond positively to the burning since it will diversify age classes in aspens and increases forb production. Elk populations should not be impacted by the burning since the area is not key winter range.

Sage grouse could be impacted by the burning. However activities further reducing winter range, which is outside of Forest Service boundaries, are most likely to limit grouse numbers.

Goshawk could be impacted if all mature aspen are removed since they occasionally use this habitat for nesting and perching. This impact will be mitigated by buffering the regenerated stands until the trees have matured.

Trumpeter swan could be impacted if units near nest sites are burned in the spring; three units near nest sites have been identified. Fall burning will be done on these units to mitigate adverse affects.

Ferruginous hawk populations could be adversely affected by disturbance to nest sites caused by burning activities and the reduction of prey species from excessive burning. Units burned in the spring will need to ensure that at least a 300 yard buffer between the burns and nest sites is maintained. Trees used for nesting will have to be protected during fall burning. To maintain healthy rabbit populations required by the hawks, it is important not to exceed a 40 to 60% burn mosaic on individual units.

There is one burn unit that could impact an active bald eagle nest. To mitigate this affect the burn could be done in the fall.

The action alternatives should not impact pine marten, boreal owl, harlequin duck, spotted bat, Western big-eared bat, grizzly bear, peregrine falcon, or gray wolf.

Vegetation

The target species, Mountain Big Sagebrush, is easily killed by even low intensity fires burning beneath the shrub crown. Two other sagebrush species common to the area, Silver and Three-tip, can sprout after fire, but past experience in the area shows that sprouting by these species is limited. Other shrub species found in the area do

sprout and generally are only slightly damaged by fire.

Grasses and forbs generally respond positively to fire. For the first two or three years after burning the vegetation is highly palatable to grazing animals. This preference by livestock to burn areas should decrease pressure on sensitive areas, such as riparian zones.

Fire can be an effective tool in regenerating aspen stands. Aspen suckers are highly selected as browse by livestock and wildlife to the point that concentrated browsing can severely damage the aspen and negate the benefits of the treatment. To control overuse, the timing and intensity of livestock use will have to be controlled and large enough areas need to be treated to prevent wildlife from congregating in small areas.

Burning in Douglas-fir encroachment will be designed to kill seedling but protect most saplings. This will maintain the area as an open stand of scattered Douglas-fir with sagebrush/grass understory.

The potential for damage to sensitive plants in the area is very low if burning is done in early spring or late fall while the plants are dormant.

Livestock Management

The action alternatives will result in increased forage production. Livestock numbers will remain constant, so more forage will be available for wildlife. Livestock distribution is expected to follow burning areas, which should reduce pressure on riparian areas.

Watershed

Increases in water yield or sediment resulting from the proposed actions will have negligible effects on water or fishery resources. Burn units make up less then 5% of area, and on the average only 50% of those units will be burned. Buffers zones of 50 feet on level ground and 100 feet on slopes over 15% will provide adequate filtering for any increased erosion that does occur.

Roadless

None of the action alternatives would remove the area from future wilderness consideration. The descriptive features of a roadless environment would remain essentially unchanged from current conditions.

Air Quality

The proposed burning will cause smoke to be evident in the air for a period of time. Emissions will be subject to the coordinating requirements of the Montana Smoke Management Memorandum of Agreement dated July 31, 1978.

DIRECT AND INDIRECT EFFECTS BY ALTERNATIVE

Alternative 1 - No Action

Big game species populations are not likely to change since the area is not winter range. Moose may use the area less frequently as aspen die out. The current antelope habitat rating of .65 out of 1.00 would fall to .46 after 20 years and then could improve to .52 after 30 years if older stands of sagebrush die off as some have predicted.

Non-game and small game species that depend on aspen stands (e.g., ruffed grouse, western bluebirds, sapsuckers) or savannah/grassland habitat (e.g., meadowlark, horned lark, morning dove) would decrease in population. Species dependent on sagebrush (e.g., Vesper sparrow, Brewer's sparrow, sage thrasher) would increase in population. Sage grouse could be be affected by a decrease in forbs available and in the condition of the riparian areas as livestock and wildlife concentrate in those areas.

No impact on sensitive, threatened, or endangered species are predicted.

Landscape diversity will decrease in both vertical and horizontal structure. The landscape will be dominated by large expanses of heavy shrub with scattered small, unconnected openings. Up to 50% of the aspens stands could die out. Conifer encroachment would increase and the sites would convert to closed canopy stands.

The dense sagebrush stands would be a natural barrier to livestock and would encourage heavier grazing in the open pockets and riparian areas. Livestock numbers would have to be reduced by 18% because of decreased forage production.

Alternative 2 - 10 Year Burning Cycle

Mule deer will be more vulnerable during the hunting season because of reduced cover. The habitat suitability for antelope will increase from .65 to .82 after 30 years of implementing this cycle. The effects on elk would be limited to calving. The increase in elk populations in the area following the intense spraying of the 60's and 70's and the low depredation of elk calves in this area indicate that elk should not be adversely impacted by this alternative

Because this alternative uses a higher then "natural" burn rate, the diversity of small game and non-game wildlife will probably be reduced. The populations of species dependent on grasslands should increase. Research on the impact of burning on sage grouse populations is inconclusive. Buffer zones around critical sage grouse habitat would be used to minimize negative impacts.

The landscape mosaic in this alternative would be dominated by a more open, grassy appearance with scattered small shrubs. The density of sagebrush would decrease along with the vertical and horizontal structure. Aspen stands would improve. Areas of conifer encroachment would remain essentially in the current condition, with an open park-like appearance.

Forage production would improve significantly over current conditions. Because livestock numbers would not change, this additional forage would be available for wildlife.

Alternative 3 - 20 Year Burning Cycle

The vulnerability of mule deer should be about the same as the no action alternative. The antelope habitat index would improve to .84 from the current .65 rating. There will be better elk calving habitat then provided by Alternative 2. Small game and non-game species preferring either old sage or grassland and young sage could benefit from this alternative. This alternative has the potential of improving sage grouse habitat as long as planned mitigation measures are followed.

This alternative would produce a fairly even mix of different shrub densities. The dominate view would be of grass dominated openings intermixed with moderate to dense stands of sagebrush. The affects to aspen stands and conifer encroachment would be similar to Alternative 2.

Forage production would increase over current levels and the highly desirable new growth would be spread out over a larger area, improving the distribution of livestock. Livestock numbers would not be increased, so the additional forage would be available for wildlife.

Alternative 4 - 30 Year Burning Cycle.

Mule deer populations should not be impacted in any way. The antelope Habitat Suitability Index would be .78 as compared to the current .65

rating. The reduced burn areas would tend to concentrate elk in the spring to the recent burn units. Adverse impacts on elk calving should be less than Alternative II or III.

Small game and non-game species that depend on grassland habitat would not benefit compared to present condition, but sagebrush dependent species could. Sage grouse habitat could be improved.

The visual landscape effects will be similar to Alternative 3, but there will be a general dominance of the heavier shrub densities. Some aspen stands could die out before they are treated with fire. Conifer encroachment would tend to a higher density and increased canopy closure.

This alternative would essentially maintain the existing conditions relative to livestock management. The mosaic of burned areas should help disperse livestock, but not to the degree of the other action alternatives.

Gravelly Sagebrush FEIS

Table II-12. Comparison of Alternatives Summary.

	1			· · · · · · · · · · · · · · · · · · ·
Measurement Indices	Alt 1	Alt 2	Alt 3	Alt 4
Wildlife				
Antelope Habitat Index (Existing =.65)	.52	.82	.84	.78
Antelope Habitat Quality	Decrease	Increase	Increase	Increase
Acres Burned in Elk Calving Areas	0	2613	1962	1217
Overall Effect on Elk Populations, Herd Structures	0	0	0	0
Overall Quality of Sagegrouse Habitat	Decrease	Decrease	Increase	Increase
Overall Change in Mule Deer Habitat	0	Decrease	0	0
Total Pounds of Forage Produced After 10 Yr Period	25,703,150	38,556,000	33,735,650	31,058,150
Change in AUMs Available for Other Resources	- 3654	+ 4585	+ 1495	- 222
Landscape Diversity				
Maintenance of Aspen	Could Lose	Maintains	Maintains	Maintains
Acres of Sagebrush in Burn Units (Years 1-5)	0	14,994	8312	5766
Acres Actually Blackened in Mosaic	0	7497	4156	2883
Percent of 42,168 Acres of Sagebrush Blackened	0	18%	10%	7%
Percent of Alternatives in Major Successional Stages Early Mid Late	0% 0% 100%	36% 9% 55%	18% 9% 73%	12% 6% 82%



CHAPTER I

Purpose and Need



CHAPTER 1 -- PURPOSE AND NEED

Proposed Action:

The Forest Service proposes to burn sagebrush on approximately 1512 acres per year for the next five years in the West Fork Madison and Antelope Basin areas of the Madison Ranger District of the Beaverhead National Forest. The 1512 acres will be made up of several individual burn units distributed over 10 grazing allotments. The number of units burned annually will range from seven to eleven and unit sizes range from 20 to 625 acres. The grazing allotments involved are Bufiox, West Fork, Antelope Basin, Conklin, North Saddle, Hidden Lake, Elk Lake, Elk Mountain, Red Rock, and Horn Mountain. On an average, each of the burn units will contain a mosaic of approximately 50% burned and 50% unburned resulting in an average of approximately 756 of the 1512 acres actually blackened.

The Forest Service also proposes to regenerate an average of 120 acres of aspen and set back an average of 80 acres of Douglas-fir encroachment per year with burns in the same areas. In most cases, the aspen and Douglas-fir treatments are adjacent to or within sagebrush burning units and will be accomplished in conjunction with the sage burns.

The specific burning proposals that will be analyzed in this document are the first 5 years of a long term program of sagebrush, aspen, and Douglas-fir manipulation in the Westfork and Antelope Basin areas. A broad overview of the project area is shown on the Vicinity Map in Chapter III.

Purpose and Need for Action:

The proposed action was developed to achieve the goals, objectives and standards of the 1986 Beaverhead Land and Resource Management Plan (Forest Plan). More specifically, the proposal has the following purposes:

The proposed action is designed to maintain the quantities of forage needed to sustain

permitted numbers of livestock and meet forage needs of big game.

The 10 grazing allotments currently provide forage for 20,131 Animal Unit Months (AUM's) of domestic livestock grazing. The sagebrush/grassland community contributes a major portion of the forage sustaining these AUM's and big game populations.

The recovery of sagebrush canopy covers in areas sprayed in the past will reduce forage production. As a result, the carrying capacities on grazing allotments for domestic livestock are reduced as well as the amount of forage available for big game. Encroachment by Douglas-fir into the sagebrush/grassland communities will further reduce the production of forage. Continued encroachment would eventually convert the sites to a Douglas-fir/pine grass community. See Chapter III discussions of existing condition.

Burning the sagebrush and Douglas-fir encroachment is needed to improve the production of forage and maintain the capacities of the grazing allotments to carry the permitted numbers of livestock and provide adequate forage for big game.

The proposal is consistent with forest wide Goal 6 and Objective 1k on pages II-2 and II-8 of the Forest Plan which respectively state: "Provide opportunities for use of forage by domestic livestock at or above current permitted levels of use while protecting or enhancing fishery habitat, riparian areas, recreation and other forest resources." and "The objective for potential permitted AUM's on the Forest will remain at approximately the current level of 190,000 AUM's."

The proposal is also responsive to the Desired Future Condition of the Forest for domestic livestock as described on page II-23 of the Forest Plan. The desired future condition for domestic livestock in decade one is noted in part as: "In the first decade, domestic livestock grazing capacity will remain at the existing level of about 190,000 AUM's, assuming management objectives for winter range and riparian areas can be achieved through implementation of grazing systems and range improvements."

Page 17 of the Record of Decision also provides for investments in nonstructural improvements such as prescribed burning to enhance forage production. The Forest Plan also provides direction for MA's 1, 14, and 24 that includes range improvements as an appropriate management practice and prescribed fire as an appropriate tool.

The proposed action is designed to maintain the diversity of wildlife habitats through (1) maintaining a variety of canopy covers in sagebrush/grassland communities, and (2) maintaining a variety of successional stages in aspen.

Of the 42,168 acres of sagebrush/grassland communities, 25,096 acres or 60% are in mid to late successional stages where canopy coverage is 11% or greater. This current distribution is primarily due to the recovery of sagebrush on many of the 21,168 acres of sagebrush sprayed in the late 1960's and early 1970's. Continued fire suppression efforts have also contributed to the recovery and current distribution of sagebrush in the area. See Chapter III, Vegetation, for a more detailed discussion of the existing condition.

One purpose of this proposal is to establish and maintain a diversity of habitats for game and non-game species. Habitat diversity will be provided through maintenance of a variety of successional stages and canopy covers in the sagebrush/ grassland communities.

Another purpose is to initiate the regeneration of decadent stands of aspen to retain the contribution of aspen as an important element of wildlife habitats and vegetative diversity. There are 5,354 acres of aspen in the area comprised of stands from one half acre to 20 acres in size. The aspen is currently well distributed and conditions range from multilayered and regenerating stands to decadent and non-regenerating stands. Review of past photo and written records indicates that many stands have died out.

This proposal is consistent with forest wide Goal 1 on page II-1 of the Forest Plan which states: "Recognize and promote the intrinsic ecological and economic value of the wildlife and fisheries

resources on the Beaverhead National Forest." and Goal 1a which states: "Provide sufficient diverse habitats to maintain viable populations of all native wildlife species to ensure diversified recreational opportunities and ecological stability."

This proposal is also consistent with Objective 1a on pages II- 3 and 4 of the Forest Plan which states in part: "Viable populations of all existing wildlife species will be maintained by providing a diversity of habitats throughout the Forest."

The proposal is also responsive to the Record of Decision, page 9 and to the desired future condition of the forest as noted on page II-21 of the Forest Plan. The desired future condition for decade one of Forest Plan implementation notes that, "Timber harvest, prescribed burning, wildlife habitat improvement projects and natural successionary forces will have combined to regenerate and rejuvenate some mature and overmature habitats."

The proposed actions will occur in Management Areas (MA's) 1, 14, and 24. The descriptions, management goals, and standards for both these MA's provide for the maintenance and enhancement of wildlife habitats and the use of prescribed fire as a method of accomplishment. Refer to pages III-2 thru III-4, pages III-44 thru III-46, and pages III-76 thru III-78 of the Forest Plan. A more detailed summary of Forest Plan direction is also provided in Chapter III.

Scope of the Proposed Action:

This document will also disclose and evaluate the effects of the proposed action on the roadless characteristics and wilderness features of inventoried roadless areas.

There are two inventoried roadless areas in the project area. They are Freezeout Mountain areas 1-029A and 1-029B. See pages C-404 thru C-420 of Appendix C to the Final Environmental Impact Statement for the Forest Plan.

The Forest Plan established Forest-wide multiple use goals, objectives, and management area requirements as well as management area prescriptions. The analysis of roadless lands, documented in Appendix C, described each roadless area, the

resources and values considered, the range of alternative land uses studied, and the effects of management under each alternative. As a result of the analysis, some roadless areas were recommended for inclusion in the National Wilderness Preservation System and others were assigned various non-wilderness prescriptions.

Both of the roadless areas noted here were assigned to non-wilderness management prescriptions. The Geographical Display Areas (GDA's) that present the non-wilderness prescriptions are found on pages IV-85 thru IV-90 of the Forest Plan. There are 18 different assigned MA's in these GDA's of which MA 1, 14, and 24 are involved in this proposal.

In addition, none of the wilderness proposals forwarded by the Montana Congressional Delegation in recent years has recommended the Freezeout Mountain area be added to the National Wilderness Preservation System.

This analysis is the site specific NEPA documentation for a vegetation management proposal to prescribe burn sagebrush, aspen, and Douglas-fir encroachment within the Westfork of the Madison and Antelope Basin Areas. See vicinity map. The scope of the proposed action is limited to the burning projects identified in Chapter II. The proposed action is not a general management plan for the area nor is this a programmatic EIS.

This proposal covers approximately 5 years of burning projects in the study areas. These projects are the initial phases of a longer term program of vegetative management that is designed to move toward a desired future condition for the areas. The individual burning projects and alternatives for the 5 year schedule will be presented on a site specific basis as will the discussion of environmental impacts. These individual projects are ready for a decision on whether to proceed.

By considering these projects as part of the longer term strategy, we are able to focus on short and long term objectives, identify the reasonably foreseeable actions for more distant outyears, display potential cumulative effects, and monitor the success of early projects before additional projects are proposed. Any future projects beyond those specifically identified in this analysis will receive complete analysis and disclosure under the National Environmental Policy Act (NEPA).

This Environmental Impact Statement was developed under the implementing regulations of the National Environmental Policy Act (NEPA), Council on Environmental Quality, Title 40, Code of Federal Regulations, Parts 1500 - 1508 (40 CFR 1500 -1508); and the National Forest Management Act (NFMA), Title 36 Code of Federal Regulations, Part 219 (36 CFR 219). Various discussions and consequences within this document are tiered to the 1986 Beaverhead National Forest Plan and E.I.S., and 1987 Beaverhead National Forest Noxious Weed Control Program E.I.S. These documents are incorporated by reference at the appropriate passages throughout the document. While the Forest Plan and E.I.S. discussed broad issues such as, the determination of suitable timber lands, the availability of various recreation opportunities, actions necessary to provide wildlife habitat, and the management direction for inventoried roadless lands, this document will focus on those specific environmental issues relative to this proposed action.

The detailed environmental analysis documented in this Environmental Impact Statement began with the identification of the proposed action. The proposal to burn sagebrush, aspen and Douglas-fir encroachment is based on agency knowledge of the existing condition of the area, Forest Plan direction, and opportunities identified by the Forest Service and the public during the West Fork Madison and Antelope Basin Implementation Analyses. The project files for the Implementation Analyses are available for review on the Madison Ranger District.

Based upon the analysis summarized in this document, the District Ranger, as the deciding officer, will determine whether to and to what extent the areas will be burned. The alternative selected for implementation and the rationale for its selection will be presented in a Record of Decision.

Organization of Final Environmental Impact Statement

Chapter II - describes the scoping and public involvement efforts and alternative ways, including the no action alternative, of addressing the significant environmental issues and management concerns related to implementation of this proposal. The measurement indices that will be used to display the effects of alternatives in regard to each issue or management concern are defined. Mitigation measures and monitoring requirements are also defined. The environmental impacts of each alternative are displayed so that a comparison of the impacts can be made.

Chapter III - discusses the environment that is affected by the alternatives. Forest Plan management direction is discussed. Affected resources are described in terms of the area affected, past management actions that affected the resources, and the existing condition of the resources.

Chapter IV - discloses the environmental consequences of implementing the alternatives using the indices of measurement defined in Chapter II and the resource descriptions in Chapter III as the basis for measurement. Direct, indirect, and cumulative effects are depicted and the effective-

ness of mitigation measures is addressed. Unavoidable adverse impacts are listed including irreversible and irretrievable commitments of resources.

Chapter V - includes a summary of public involvement prior to the Draft EIS and involvement between the Draft EIS and Final EIS. Copies of all written comments and Forest Service responses are also incorporated in this chapter.

List of Preparers - contains a listing of the individuals who prepared this document, including names, educational qualifications, and years of direct experience relating to resource management.

Glossary - defines the terms used in the text that may be unfamiliar or specialized. Acronyms are defined after their first usage in the text.

Appendix - contains analytical reports and site specific or supplementary information that adds depth to the discussions in the main chapters.

CHAPTER II

Alternatives



CHAPTER II -- ALTERNATIVES

Changes Between Draft and Final:

Alternatives Considered in Detail:

Alternative Descriptions:

Due to the amount of time it has taken to prepare the Draft and Final Environmental Impact Statements, the burns scheduled for the spring of 1991 will not be accomplished as originally scheduled.

The original burning schedules were displayed in tables II-2, II-3, II-4, and II-8. In order to maintain the integration of burns within the pasture rotations and be consistent with mitigation requirements, the spring, 1991 burn units have been rotated to the end of the first 5 year burning cycle. They are now scheduled for burning in the fall of 1996. The above noted tables have been revised to show this change.

This adjustment in burning schedules does not change any of the environmental effects or ratios of canopy covers and successional stages that would result from the burning program.

Features Common to all Action Alternatives:

Specific Features and Mitigation Measures:

Wildlife:

As a result of Public comment and additional coordination with the Montana Department of Fish, Wildlife and Parks, the mitigation measures for wildlife have been expanded.

Expanded mitigation deals primarily with the mosaic to be acheived in units identified by Department Biologist, Bob Brannon in important elk calving areas. The measures are displayed in detail in the

wildlife section of Specific Features and Mitigation Measures portion of this chapter.

New information was provided relative to the sensitivity of Ferruginous hawks to disturbance (White and Thurow, 1985). Based on this new information, mitigation measures for the hawk have been modified. See Features Common to all Action Alternatives.

Diversity:

As a result of public comment, two additional mitigation measures have been incorporated into the discussion of Diversity in this chapter.

One of the mitigation measures is designed to respond to questions regarding modification of the burning schedule if prescribed burns end up being larger than predicted or if a natural fire occurs in the project area.

The second measure is designed to respond to questions regarding the protection of aspen regeneration from overbrowsing by livestock and wildlife.

Burning Prescriptions:

Public comments and questions expressed concerns on the ability of the Forest Service to control the prescribed burns. There were also concerns about the potential of damaging the grass and forb components of the vegetation, particularly Idaho fescue. To respond to these concerns, additional information was analyzed and is summarized under a new "Burning Prescriptions" section of Features Common to all Action Alternatives.

Air Quality:

As a result of further analysis and to insure proper coordination with the Montana State Airshed Group, a new mitigation measure has been added to Features Common to all Action Alternatives.

General Introduction:

Chapter II describes the environmental issues that were developed relative to the proposed action and the alternatives that were formulated in response to the issues. Alternatives considered but not given detailed study are also described. A comparison of the environmental impacts of the alternatives and the mitigation measures are presented. The comparison of effects in this chapter, coupled with the discussion of environmental consequences in Chapter IV of this assessment provides the decision maker with the information needed to make a reasoned choice between alternatives.

A financial analysis was also developed as a projection of the economic efficiency of the alternatives. The analysis displays the present net value of all alternatives. The complete financial analysis is attached to this document as Appendix A.

Alternative Development Process:

Introduction:

Alternatives were designed to sharply define the environmental issues developed through both internal and external scoping while wholly or partially responding to the purpose and need described in Chapter I.

Four alternatives are considered in detail; a no action alternative and three action alternatives. The action alternatives present various schedules and locations of projects as well as different senarios for mitigating their effects. The alternatives represent a reasonable range of actions to accomplish the goals stated in the purpose and need while being responsive to the environmental issues. Alternative 3 is the preferred alternative.

Description of Scoping and Public Involvement:

On January 10,1990 an internal scoping session was held at the Madison Ranger District in Ennis to identify potential issues and concerns with burning sagebrush, Douglas-fir, and aspen in the Westfork Madison and Antelope Basin Areas.

The potential issues and concerns identified were:

Wildlife: Impacts to elk calving areas, antelope and deer fawning areas, and sagegrouse populations.

User Conflict: Disturbance of hunters and outfitters by the smoke if fall burning were conducted and possible visual impacts of burned areas from the Continental Divide National Scenic Trail (CDNST).

Adjoining Ownerships: Potential of damage to private land and property from escaped fire and the need to coordinate our proposals with management activities on private land, BLM, and Targhee National Forest.

Following the internal scoping, the proposal and potential issues were brought to the public to; (1) introduce the proposal to interested and potentially affected individuals, organizations, and other agencies; (2) identify and develop the environmental issues and concerns that would be addressed; and (3) determine the strategies and criteria that would be used to measure impacts.

A news release was prepared and sent to the Forest and District mailing list and individuals who had participated in the Implementation Analysis on the Westfork of the Madison and Antelope Basin Areas.

Open houses were held in Butte on February 5, 1990; Ennis on February 6, and Bozeman on February 7.

As a result of the open houses and other contacts, eighty eight written responses were received. Public responses were analyzed by the interdisciplinary team on March 21, 1990. The analysis of responses resulted in the identification of twenty common issues or concerns. From this list, significant environmental issues related to wildlife and landscape diversity were formulated which would require definition by alternatives. Several other concerns that would be addressed through discussions of impacts and mitigation measures were also brought forward. Complete copies of all public responses are incorporated in the project file.

To continue public involvement, a Notice of Intent to Prepare an Environmental Impact Statement was forwarded to the Office of the Federal Register on April 17, 1990. The Notice of Intent appeared in the Federal Register on May 2, 1990. As a result of the Notice, additional written responses were received from the U.S. Fish and Wildlife Service, the Montana Department of Fish, Wildlife and Parks (MDFWP), and the Skyline Sportsmen's Association. The first Skyline response requested additional information on the proposal. The response from the U.S. Fish and Wildlife Service provided information and offered assistance regarding compliance with the Threatened and Endangered Species Act (P.L. 93-205). The response from MDFWP requested additional information regarding the description of existing conditions presented in the Notice of Intent. The Department also offered some of their own findings relative to existing conditions and additional thoughts on the values of sagebrush communities.

On June 22, 1990, a second response from Skyline Sportsmen's Association was received which addressed each of the purposes identified in the Notice of Intent. Some specific concerns were the level to which cumulative effects would be addressed, the need to re-evaluate and change the in-place grazing systems, loss of wildlife habitat, the need for more study and information relative to the relationships of the wildlife and habitats in the project area, potential impacts to soils, that grazing management is the real issue, and a suggestion that "No Action" would be the best action. This response also included 7 pieces literature primarily related to the relationship of big game and sage grouse to sagebrush.

All of the comments received after the filing of the Notice of Intent are incorporated in their entirety in the project file.

During the summer of 1990, representatives from the Madison District and MDFWP reviewed the project area on the ground. Existing conditions were discussed and MDFWP further offered suggestions for modifying the proposal on specific burn units. The suggestions ranged from dropping some units from the proposal, deferring treatment of others, to describing the mosaic and percent burned/unburned which would be desirable in the

units that would be treated. Specific documentation of the field reviews and discussions is incorporated in the project file.

A separate field review was scheduled for October 4, 1990 with the expressed purpose of reviewing the project area with the Montana Wildlife Federation, the Skyline Sportman's Association, and the Gallatin Sportsman's Club. These organizations had expressed some particular concerns on the proposed action. There were no representatives from these organizations at the review. A subsequent letter to these organizations expressing the availability of the Forest Service to visit the areas again at the request and convenience of the organization resulted in no additional requests.

In December of 1990, an additional review of the alternatives and wildlife analysis was conducted with MDFWP representatives. The response of the alternatives to the purpose and need as well as the ratios of burned/unburned area within the mosaics was also discussed. No specific adjustments to the proposed action or alternatives were made as a result of this review.

Complete documentation of the internal scoping, public involvement, and analysis of comments is contained in the project file.

Environmental Issues:

The following significant issues were developed from the internal concerns identified by the interdisciplinary team and responses received during public scoping and follow-up contacts and reviews. While public comments were numerous, there was a common thread. The common thread generally revolved around a concern for wildlife and wildlife habitat and diversity.

Issue 1 - Wildlife:

What effect will burning sagebrush, aspen, and Douglas-fir encroachment have on wildlife?

Comments relative to the wildlife issue were mixed. Some participants felt that burning harms wildlife while others felt that wildlife would generally benefit from burning.

The project area provides habitats for a wide range of wildlife species. Big game species of particular concern were elk, mule deer, and antelope. The area also provides yearlong range for moose but there were no specific concerns expressed. There is no critical winter range for the other big game species in the project areas. Small game species of concern are sage, blue and ruffed grouse. Sage grouse are of additional importance as the management indicator species for the health of sagebrush habitats. Some comments also expressed general concerns for impacts on non-game species (small mammals and songbirds).

How will burning affect the habitats of game and non-game species? Can a program of burning be implemented that will improve wildlife habitats in general? How much can be burned, and when will it be burned?

The Montana Department of Fish, Wildlife, and Parks was particularly concerned about the impacts of burning on the cover and security of elk calving areas.

How will the burning impact elk calving?

Some landowners expressed concerns that elk populations were increasing and using more of the forage on private lands needed for domestic livestock.

Will the burning provide additional forage for elk and other big game on National Forest Lands? How Much?

Indices of measure that will be used to display the effects of alternatives relative to this issue are:

1) Habitat suitability index for antelope. 2) Acres burned within elk calving areas. 3) Changes in sage grouse habitat. 4) Changes in habitat diversity for non-game species.

Issue 2 - Landscape Diversity:

What effect will burning have on landscape diversity?

This issue is concerned with how the area looks to the forest user on a broad landscape basis.

The landscape considered encompasses approximately 161,170 acres of the West Fork Madison and Antelope Basin areas. The terrain ranges from steep mountains to gently rolling foothills. Vegetative cover ranges from bare rock slopes through dense conifer forests to open sagebrush and grassland communities. The approximate distribution of vegetative communities is presented in more detail in Chapter III.

Concerns relative to landscape diversity were mixed. Some participants felt that diversity should be the result of natural processes such as wildfire and uninterrupted natural succession of vegetative communities. Others felt that the natural diversity had already been compromised due to past activities such as spraying and fire suppression and could be returned to a more natural condition with the introduction of fire back into the system.

How will landscape diversity be affected by the proposal? How will the area look in the future? Can the burning projects be designed to establish or mimic a more natural condition?

Alternatives Considered But Not Given Detailed Study:

Introduction:

The interdisciplinary team considered 4 other alternatives during their deliberation and design of the alternatives presented in detail in subsequent sections of this document. Alternative treatment methods, treatment schedules, and the use of natural fires were considered. The following discussion presents a brief summary of the reasons that these alternatives were not brought forward and given detailed study.

Aerial Spraying with 2-4-D:

The use of chemicals, primarily the herbicide 2-4-D, was examined as one possible way to treat the sagebrush. Aerial spraying with 2-4-D was economically and successfully used on relatively large acreages of sagebrush in 1950's and 60's. However, as public and Forest Service awareness and concern over the broad use of herbicides increased, and more stringent environmental safeguards were adopted, the general desirability

and efficiency of using chemicals began to wane from the standpoints of environmental quality and protection, and economics.

In more specific terms, use of chemicals, while resulting in increases in grass production, also resulted in decreases in forb production. Loss of the forbs is contrary to part of the objective of maintaining or enhancing vegetative diversity.

Early large scale spray projects were accomplished with relatively high economic efficiency. Per acre costs ranged from \$5 to \$10. In terms of this proposal, the relatively small acreages that would be sprayed per year, along with the environmental controls and safeguards that would be implemented, and the increased costs of the aircraft, currently present a different scale of economics. It is estimated that costs today would run in the \$40 to \$50 per acre range.

A positive feature of aerial spraying is the ability restrict the spraying more specifically to the target stands. Better control of the resulting mosaic of treated/untreated areas would result. There would still be a concern for "drift" of herbicide out of the target area.

The ID team however, did not feel that the better control obtained by aerial spraying outweighed the other factors, and therefore dropped this alternative from detailed study.

Mechanical Treatment:

The mechanical treatment alternative examined such activities as plowing, cabling, or chopping the sagebrush with heavy equipment. Plowing is accomplished by pulling a large rangeland plow behind a dozer. The plow cuts under and turns over the soil and sagebrush. Cabling is accomplished by stringing a length of heavy cable between two dozers and dragging it through the sagebrush. The sage is either broken off or physically torn from the ground. Chopping is accomplished by pulling or pushing a large drum with cutting blades affixed that rolls over and chops the sage up.

There are several concerns associated with these treatment methods. All three mechanical treatments

result in relatively large areas of disturbed soils. The loose soils would be more susceptible to movement by wind and water. The windrows, furrows, and hummocks left after the treatment would also be more visually impactive until the vegetation fully recovers and screens the activity. The mechanical treatments also disturb more of the root systems of the grasses and forbs and they must go through a period of recovery before returning to full productive potential. Another concern is economic. From past experience, mechanical treatment of sagebrush will cost \$50 to \$60 per acre. This is more costly than aerial spraying and 5 to 10 times more costly per acre than burning.

There are some positive features of mechanical treatments. These methods provide the optimum control over the areas treated and the resulting pattern in the treated/untreated mosaic. The overall objectives of the project could be met to a high degree. The timing of mechanical treatment is also very flexible and could be scheduled around the pasture rotations within an allotment. Disruption of the established grazing systems would be minimal.

The ID team however, felt that these positive features did not outweigh the negatives to the degree that this alternative should be given detailed consideration. Care in design of burning prescriptions and ground controls will result in the desired pattern of treated/untreated areas. The personnel who will design and implement the burns also have many years of experience in conducting these kinds of projects. Burning can also be scheduled within the established grazing patterns but does require more coordination. And lastly, the costs of mechanical treatment are very high in comparison to burning.

Accelerated Burning Schedule:

The third alternative examined but not given detailed study was an alternative to accomplish all of the scheduled sagebrush treatment in a five year period. This alternative would result in the greatest amounts of forage produced in a very short time span and would be most responsive to the purpose and need of enhancing forage production for livestock and big game. Within this

five year period, nearly all of the acres designated for treatment would be converted to grass and forbs with the exception of the sagebrush remaining as a mosaic within the burned areas. The great majority of the area would be in the early successional stages of sagebrush/grassland development.

The ID team did not give this alternative detailed study because it did not respond to either of the significant issues. This alternative was also not responsive to stated purpose of maintaining a variety of canopy covers in sagebrush/grassland communities. A five year schedule would not provide landscape diversities approaching natural conditions over the long term. Diversity of wildlife habitats would also be weighted very heavily to early successional stages with very little of the mid and late successional stages of sagebrush remaining.

Natural Fire Alternative:

The fourth alternative examined but not given detailed study was to allow natural fire to make the desired changes in the vegetation. This alternative would be responsive to the landscape diversity issue as natural fires would establish over time, a more natural scale of change and diversity. Such a natural change would re-establish the conditions present before the beginnings of fire management and control. It is not expected that a totally natural condition would ever be established due to the density of constructed roads, wheel-track roads and trails that would modify and constrain natural fire behavior.

Research (see Affected Environment, Vegetation, Chapter III) suggests that the natural fire frequency is such that the area would be dominated by open grasslands with sagebrush and conifers existing on the drier, rocky sites where fuels were insufficient to carry the fires. While this may be very desireable over the long term from a forage production standpoint, the ID team was concerned about the effects that unscheduled natural fires would have on grazing systems and facilities on livestock allotments. A natural fire in the wrong place and at the wrong time within an allotment could result in a need to re-align the grazing system.

Livestock may not be permitted to use a particular pasture or portion of an allotment recently burned and other pastures would have to be utilized to compensate for the loss. If the other available pastures, for example, had been scheduled for "rest" in this particular year, adequate forage may not be available. Utilizing these pastures out of sequence could also result in the onset of other resource problems such as riparian impacts which the current grazing systems were designed to prevent. If the natural fire were large enough, a worst case may be the deferment of any grazing on the allotment for at least one season. The ramifications of this on the livestock permittee could be very important.

There are many miles of fence, numerous water developments, range cabins, etc, that were constructed to implement the current grazing systems. Natural fires could destroy or severely damage many of these improvements. The initial investment made to construct the facilities, and subsequent investments in maintenance would be lost. The facilities would have to be reconstructed if grazing were to continue. In addition to the direct costs associated with the reconstruction of the facilities, the schedule of accomplishment may take several seasons resulting again in disruption of the grazing systems. The disruption may be minor if only a few facilities are damaged and are quickly reconstructed. The disruption could also be major if several seasons are needed to reconstruct many facilities and the permitted use is either reduced or deferred completely to adequately protect other resource values such as soils and watershed.

The interdisciplinary team was also concerned that large natural fires could have immediate and direct effects on watershed and fisheries values, particularly in areas of steeper slopes and more fragile soils. Removal of vegetation on a large scale in these areas could result in damaging levels of sedimentation. Natural fires can also become very difficult to control, can threaten private property, and become very costly to suppress.

The Beaverhead National Forest Fire Management Action Plan was also reviewed in relation to this alternative.

As per the Action Plan, allowable wildfire suppression strategies include control, contain, and confine. Specific suppression response information can be obtained from the Action Plan. Definitions of suppression strategies are:

Control - To complete the control line around a fire, any spot fires therefrom, and any interior islands to be saved; burn out any unburned area adjacent to the fire side of the control line; and cool down all hot spots that can reasonably be expected to hold under foreseeable conditions.

Contain - To surround a fire, and any spot fires therefrom, with control line, as needed, which can reasonably be expected to check the fire's spread under prevailing and predicted conditions.

Confine - To restrict the fire within determined boundaries established either prior to the fire, during the fire, or in an escaped fire situation analysis.

In this project area, the use of prescribed fire is proposed in Management Areas 1, 14, and 24. Prescribed fire, as defined in the Fire Management Action Plan, is a fire burning under specified conditions, which will accomplish certain planned objectives.

The use of natural occurring fire must be considered, however the opportunities are fairly limited. The Fire Management Action Plan has established limits on the number of allowable annual burn acres for each Management Area. Limiting factors for the use of natural fire within these areas include any ignition adjacent to area boundaries where escape to other Management Areas would be likely, other larger fires within the area which may escape, and the relatively small total acreage that can be burned in each Management Area. The annual allowable acreage burned by wildfire on a forest-wide basis is presented in the following table.

Table II-1. Annual Allowable Burned Acres by Wildfire.

Management Area	Allowable Acres
1	1500
14	50
24	900

While natural fires may provide the most natural landscape over time, and ultimately could result in the greatest quantities of forage over the long term, the ID team felt that the potential magnitude of natural fires, damage to other resources, the threat to private property, suppression costs, the loss of facilities, the potential for significant disruption of current grazing systems, and the potential economic impact on both the agency and the livestock permittee did not warrant giving this alternative detailed study. The Beaverhead Fire Management Action Plan places severe restrictions on the total acres allowed to be burned by wildfire. In general, wildfires will be controlled. In summary, natural fires are not the appropriate means to achieve the management objectives for these areas.

Alternatives Considered in Detail:

Features Common to all Action Alternatives:

Introduction:

In this section, the specific features and mitigation measures found in all action alternatives are presented. The features and mitigation measure are responsive to elements of the purpose and need, environmental issues, and other public comments or concerns.

Specific Features and Mitigation Measures:

Wildlife:

Wet meadows provide important feeding sites for sage grouse and adjacent sagebrush is important as cover. To maintain the integrity of the wet meadow feeding sites and adjacent cover, a 150 foot buffer of unburned sagebrush will be provided around wet meadows. This measure also provides protection to wetlands discussed in the description of Management Area 14 lands in Chapter III.

No currently active or historical sage grouse breeding sites (leks) have been inventoried within the burn areas. However, if such a site is discovered, a buffer of 1.5 miles of unburned area will be retained around the lek to secure its integrity.

Ferruginous hawk, a sensitive species, are suspected to nest in the upper reaches of the West Fork Madison river in the vicinity of Patchtop Mountain, Landon Ridge, and Snowshoe Pass. No nest sites have as yet been discovered within or immediately adjacent to burn units. The hawk is very sensitive to disturbance during egg laying and incubation. Even minor disturbance could cause abandonment of the nests. To mitigate this impact, the Landon, Patchtop, and Metzel units and areas around the units will be surveyed for nest sites prior to burning. If nests are discovered in or within 440 meters of a unit, the unit will not be burned in the spring. In addition, the specific nest site will be buffered so the site itself is not destroyed by fire (White and Thurow, 1985).

Cottontails and jackrabbits are important prey species for Ferruginous hawk. To maintain suitable habitat for the prey species it is important to not exceed a 40-60% mosaic within the burn units in the upper reaches of the West Fork Madison River. To mitigate this impact, burn units and prescripations will be designed to achieve a 40-60% burned/unburned mosaic.

There are Trumpeter Swan nesting sites on Conklin and Elk Lakes. Burn units approach to within 300 yards of the nest sites. Burning these units in late March or in April when the swans are either preparing the nest or incubating could cause abandonment of the nest. To mitigate this potential impact, the Elk Lake Unit #5, Conklin-Pothole Unit #4, and Conklin/Sheepfield Unit #3 will be burned in the fall.

A Bald Eagle nest site is located on the east side of Elk Lake near the north end of the lake. Smoke from a spring burn of Elk Lake Unit #5 could drift into the nest area and cause abandonment of the nest during incubation. To mitigate this impact, Elk Lake Unit #5 will be burned in the fall.

More specific discussions on the effects of the proposal on threatened, endangered, and sensitive

species are presented in the Biological Evaluation, Appendix B.

In response to public comment and MDFWP recommendations, the following mitigation measures are incorporated to compensate for potential impacts of burning in elk calving habitat.

Within burn units identified by MDFWP Biologist Bob Brannon as being important for elk calving, burns will be designed to achieve a mosaic of 50% to 70% unburned sagebrush within the units. These units are identified in letters from the Department dated August 16 and October 25, 1990 which are incorporated in the project file. To accomplish this objective, a cooler burning prescription will be applied.

The specific units to which this measure will apply are:

Metzel Unit #3.
Landon Unit #18, (upper 1/2).
Lobo Unit #1, (upper 1/2).
Lobo Unit #2, (upper 2/3).
Freezeout Unit #10.
Horn Mountain Unit #1, (upper 1/2).
Conklin Shawfield Unit #3.
North Saddle-Lower Poison Units #2 and 4.
North Saddle-Middle Poison Units #2, 3, and 4.
North Saddle-Upper Poison Units #2 and 4.
North Saddle-Antelope Unit #5.

Diversity:

One purpose of the project is to establish and maintain a diversity of canopy covers in the sagebrush communities. On a large scale, diversity is discussed in relation to the landscape diversity issue. On a more site specific basis, an additional objective is to establish diversity within the individual burn units. To accomplish the more site specific objective, all burn units and burning prescriptions will be designed to achieve a 40-60% (average 50%) burned/unburned mosaic within the individual units.

As a result of questions received during the public comment period relative to effects of natural fires and larger than predicted prescribed fires, and the protection of regenerating aspen, the following

mitigation measures have been added to this section.

If due to unforseen conditions, prescribed fires burn a larger area than planned, or the mosaic contains more burned sagebrush than was planned, or a large natural fire occurs within the project area, the effects of such occurrences will be analyzed before continuing with the scheduled burning sequence. This will insure the overall diversity objectives can still be met with continued prescribed burning. If these other occurrences are of such magnitude that diversity objectives can not be met, future burn units will be dropped from the schedule or modified to bring the program back in line with the stated objectives.

A purpose of the project is the regeneration of decadent aspen stands. If post fire monitoring indicates poor response of aspen to the fires, remaining aspen stands will be excluded from future burns and other methods of regeneration will be used to accomplish regeneration. If monitoring shows overbrowsing of the regenerated aspen by livestock or wildlife, the affected stands will be protected by fencing or herding until the sprouts grow out of reach of browsing animals. If these measures are not successful, remaining aspen stands will be protected from further burning and other methods of regeneration will be analyzed.

Livestock Management:

All proposals to burn are in management areas that are available and suitable for livestock grazing. Field reconnaisance confirmed on a more site specific basis that the specific burn units are located on lands suitable for grazing. Summaries of these reviews are found in Chapter III and in the project file.

The public expressed concerns that livestock numbers would be increased as forage increased and there would be no benefit to big game. One of the purposes of the project was to improve forage production for livestock and big game. To accomplish this objective, none of the action alternatives provide for or assume an increase in livestock numbers to utilize forage increases. The current numbers of livestock will not change, Forest Plan range utilization standards will continue

to be met, and there will be a net increase in forage available for big game.

Several public comments expressed a need to redesign the grazing systems to prevent overutilization of forage increases and protect other resource values. All grazing allotments are currently being managed under rest-rotation or deferred grazing systems. The success of these systems is demonstrated in the overall good to excellent condition of the ranges. To avoid disruption of these grazing systems and the need to re-design the system of rest and rotation among pastures, all burning projects will be sequenced within the existing systems (Hormay, 1970). This is generally accomplished by scheduling the burns in such a way that treated areas will receive a period of recovery before being grazed.

Watershed:

All action alternatives will have burns in close proximity to streams. While the potential for soil movement and impact to streams is minimal, the following mitigation measure will be implemented in all alternatives.

On slopes of 0-15%, a 50' buffer of unburned area will be maintained along streams. On slopes greater than 15%, the buffer will be increased to 100' from the stream. These strips of unburned vegetation will provide adequate filtering of any erosion that does occur in the burn units. This measure also provides additional protection to the wetlands described in Management Area 14 in Chapter III.

Burning Prescriptions:

The following information is provided in response to concerns about the control of prescribed fires and about damage to non-target vegetation.

The following is a summary of the burning prescription that will be utilized on a general basis to achieve the average 50% burned and 50% unburned mosaic. This general burning prescription will be further modified to achieve the "cooler" burns noted in the previous discussions of mitigation under Wildlife to achieve the 50% to 70% unburned mosaic within elk calving areas.

Spring Burn.

Temperature: 45 - 65 degrees
Relative Humidity: 25 - 45 %
Wind Speed: 5 - 12 MPH

Spring burns will be accomplished between snow melt and greenup. There should be scattered patches of snow remaining in the unit to help achieve the mosaic.

Fall Burn.

Temperature: 45 - 65 degrees
Relative Humidity: 25 - 45 %
Wind Speed: 5 - 12 MPH

High soil moisture is important in fall burns. Burning will be scheduled following 1-2 days of soaking rains. Ignition pattern will be variable and a larger holding crew will be needed to guide the fire around to achieve the 50/50 mosaic.

To protect grasses and forbs, spring burns will be completed before plants break dormancy and begin to grow. Fall burns will be completed after grasses and forbs have gone into dormancy. High soil moisture will also be needed to minimize damage to grasses and forbs.

Air Quality:

To protect against violations of air quality standards in Class I and II airsheds, burning projects will be coordinated with the Montana State Airshed Group. Burning activities will comply with the procedures of the airshed group and Best Available Control Technology (BACT) for open burning.

Monitoring:

Sagebrush Mosaic:

To determine if prescribed fire prescriptions are maintaining the planned mosaic of burned and unburned sagebrush within each burning unit, post burn monitoring of the fire patterns would be required.

The purpose of the post burn monitoring would be the detailed mapping of the burned and

unburned sagebrush within a unit. This monitoring will validate current burning prescriptions and aid in adjusting future prescriptions.

The method that will be utilized in the monitoring efforts will be a general walk through exam and mapping of burned and unburned sagebrush plants. Post burn photographs will be used as an add in refining the map. Monitoring activities will be completed for every unit directly after the burn. Work will be accomplished by the Madison Ranger District Range Conservationist.

Sagebrush Reestablishment:

To determine if sagebrush is reestablishing itself in the burn areas, sagebrush monitoring will be required within burn units after they are treated.

The purpose of the post burn sagebrush monitoring will be to document the response of the sagebrush plants and community to fire. Monitoring will center on the establishment of sagebrush seedlings and their survival over the years.

The method that will be utilized in the monitoring will be a vegetation transect to measure the density of sagebrush plants by age class along with total sagebrush canopy cover. Monitoring will be completed on selected burn units located throughout the project area. Sites will be selected to represent the variation within the sagebrush/grass vegetation. At least one site will be established each year. Transects will be established one year post burn and re-read every five years there after. Work will be accomplished by the Madison Ranger District Range Conservationist.

Aspen:

To determine how well the fire treatment stimulates aspen regeneration post burn aspen monitoring will be required.

The purpose of the aspen monitoring will be to measure the density of new aspen suckers sprouting after the burn and monitor their utilization by livestock and big game.

The method that will be utilized in the monitoring will be a general walk through survey which include

quick plots to measure sucker numbers and livestock/big game utilization. Monitoring will be completed in selected aspen stands within burn units. Stands will be selected to represent the variation within the aspen. Stands will be measured the first fall after the burn and remeasured yearly for three years. Work will be coordinated by the Madison Ranger District Range Conservationist or Wildlife Biologist.

Sage Grouse:

The impacts of burning on sage grouse habitat and populations is a major public concern. Grouse populations have experienced fluctuations in the past. For several years, the Madison Ranger District has maintained a program of reporting all sage grouse observations on the project area. The purpose of the program is to monitor the distribution and populations of grouse. Sage grouse observations and historical records to the early 1950's indicate a very low population.

This ongoing district program will be continued into the forseeable future. The purpose is to continue gathering the basic population and distribution information and determine if there are any measureable reactions of the grouse to the

burning activities. This monitoring effort will be coordinated by the Madison District Wildlife Biologist.

Elk:

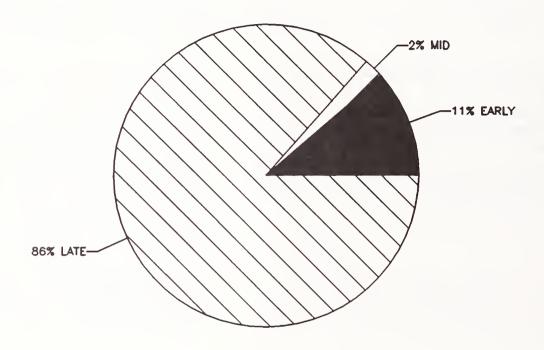
The impacts that burning would have on calving elk is a major concern. For the past six years, MDFWP has conducted a radio location study of calving elk in the Antelope Basin and West Fork Madison areas. Continuation of this study is an essential monitoring element.

One purpose of the study would be to monitor the reaction of calving elk to the burning projects. Reactions would be measured for short and long terms. Short term measurements would include any immediate reactions of calving elk during the actual burning projects and for a period of 1-2 years after the burn. Long term measurements would include monitoring any trends or large scale shifts in the general elk movement and calving patterns. Long term monitoring would continue for at least a 10 year period.

Coordination with the MDFWP on this monitoring effort will be accomplished by the Madison District Wildlife Biologist.

Figure II-1. Successional Stages of Sagebrush Currently Existing in the Project Area.

PERCENT OF AREA BY FORAGE SUCCESSIONAL STAGE EXISTING CONDITION



Alternative Descriptions:

A description of the No Action and the three alternatives considered in detail is presented below. As a part of each discussion, a graph is presented which depicts the distribution of successional stages that would be acheived and maintained within a given alternative.

Alternative 1 - No Action:

The No Action alternative would initiate no burning activities in the project area. All of the sagebrush would eventually progress into late successional stages. The alternative is the primary reference point for comparison of the diversities that would result from the action alternatives. The diversities resulting from action alternatives can be compared against both the existing condition shown in figure

II-1 or against the ultimate condition of 100% of the area in late successional stages.

Alternative 2 - 10 Year Burning Cycle:

Alternative 2 initiates the conversion of later successional stages and dense canopy covers by burning at a rate of approximately 3024 acres per year over the 10 year cycle. The diversity that is established through the first 10 year cycle would then be maintained over subsequent decades by additional burning at approximately the same rate. The additional burning would convert the areas not treated in the first decade and which continued to develop successionally. The schedule and areas that would be burned are shown on the Alternative 2 map and are summarized as follows:

Table II-2. Schedule of Burn Units and Acres - Alternative 2.

Schedule of Burn*	Number of Units	Acres
Fall 91/Spring 92 Fall 92/Spring 93 Fall 93/Spring 94 Fall 94/Spring 95 Fall 95/Spring 96 Fall 1996	18 18 18 16 11	2741 2837 2541 2873 2543 1459
Totals	93	14,994**

^{*} The reason that both Fall and Spring burns are shown in this and subsequent alternative descriptions is due to variability of weather and when suitable burning conditions may be present. Scheduling in this way also provides the flexibility needed to accomplish individual projects within the mitigation requirements discussed previously.

years does not average out to the 3024 acres per year that is proposed in the alternative. The reason is that the initiation of this burning cycle is the most difficult to schedule within the pasture rotations on the grazing allotments. To accomplish the full 3024 acres per year would require disruption of the pasture rotation schedules to stay within the mitigation requirements discussed previously. This more aggressive burning cycle must also wait until later in the cycle for the units that were sprayed to be ready for treatment. As these units are picked up toward the end of the 10 year period, the annual acreage treated will be greater than the first half of the cycle. The net result will be the 3024 average described in the alternative.

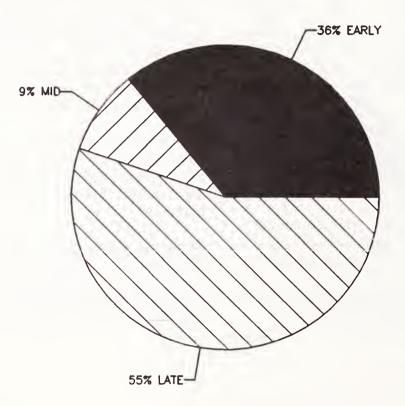
This alternative emphasizes early successional stages and is the most responsive of the action alternatives to the purpose and need discussing improvement of forage production for livestock and wildlife.

This alternative would result in a landscape mosaic which would favor early successional stages with scattered stands of late stages that are allowed to progress naturally. There would be very little of the mid successional stages in the mosaic.

^{**} In this alternative, the 14,994 acres scheduled for treatment in the first five to five and a half

Figure II-2. Successional Stages of Sagebrush Resulting from Alternative 2.

PERCENT OF AREA BY FORAGE SUCCESSIONAL STAGE ALTERNATIVE 2



Alternative 3 - 20 Year Burning Cycle (Preferred Alternative):

Alternative 3 initiates the conversion of later successional stages and densest canopy covers by burning at a rate of approximately 1512 acres per year over a 20 year cycle. The diversity that is established through the first 20 year cycle would then be maintained by a regular program of burning to treat the stands that have now progressed into later successional stages. The schedule and areas that would be burned are shown on the Alternative 3 map and are summarized as follows:

Table II-3. Schedule of Burn Units and Acres - Alternative 3.

Schedule of Burn	Number of Units	Acres
Fall 91/Spring 92 Fall 92/Spring 93 Fall 93/Spring 94 Fall 94/Spring 95 Fall 95/Spring 96 Fall 1996	11 9 10 10 9 7	1505 1513 1492 1540 1315 947
Totals	56	8312

This alternative is designed to be responsive to both elements of the purpose and need. Forage production is improved and the diversity of canopy covers and wildlife habitats that would be developed and maintained over time would cover the full range of successional stages with a favoring of the later stages.

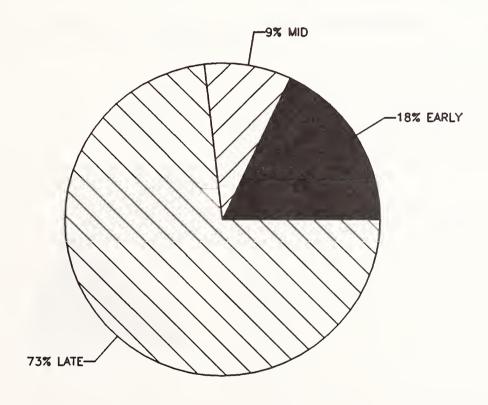
Alternative 3 defines the Landscape Diversity issue by establishing and maintaining a broader spectrum of successional stages within the

sagebrush communities. A variety of wildlife habitats will be maintained.

Figure II-3 displays an approximation of the diversity that would result from Alternative 3.

Figure II-3. Successional Stages of Sagebrush Resulting from Alternative 3.

PERCENT OF A LEA BY FORAGE SUCCESSIONAL STAGE ALTERNATIVE 3



Alternative 4 - 30 Year Burning Cycle:

Alternative 4 initiates the conversion of later successional stages and densest canopy covers by burning at a rate of approximately 1008 acres per year over the 30 year cycle. The diversity that is established through the first cycle would be maintained by a regular program of burning to

treat the stands that have now progressd into later successional stages. The schedule and areas that would be burned are shown on the Alternative 4 map and are summarized as follows:

Table II-4. Schedule of Burn Units and Acres - Alternative 4.

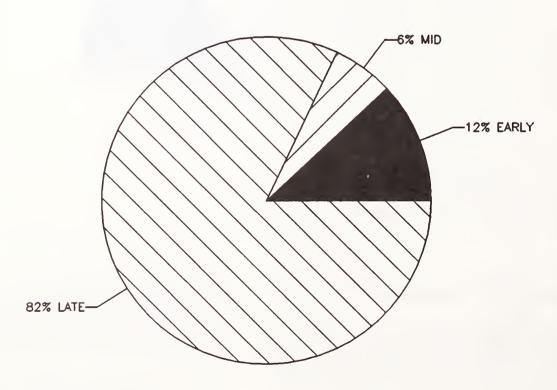
Schedule of Burn	Number of Units	Acres
Fall 91/Spring 92 Fall 92/Spring 93 Fall 93/Spring 94 Fall 94/Spring 95 Fall 95/Spring 96 Fall 1996	7 3 8 7 11 5	1110 1111 1022 970 828 725
Total Units	41	5766

This alternative is responsive to both elements of the purpose and need. Forage production will be maintained, and a full range of successional stages, hence diversity will be maintained. Late successional stages are more heavily favored in this alternative.

Figure II-4 displays an approximation of the diversity that would result from Alternative 4.

Figure II-4. Successional Stages of Sagebrush Resulting from Alternative 4.

PERCENT OF AREA BY FORAGE SUCCESSIONAL STAGE ALTERNATIVE 4



Comparison of Alternatives:

Through many of the following discussions, references will be made to the various successional stages and canopy covers that will result from the

alternatives. The reader is referenced to the figures (pie charts) presented earlier in this chapter, and to the figures presented in chapter 4 as an assist in understanding the following comparisons.

Wildlife:

The following discussion will offer a comparison on the alternatives as they relate to the purpose and need of the proposal and to the major elements of the wildlife issue.

One purpose was to maintain forage for current permitted livestock and meet forage needs of big game. Alternative 1, No Action is the least responsive to this purpose while Alternative 2 is the most responsive. Forage production figures presented in the following table are a summary of the detailed analysis presented in Chapter 4.

Table II-5. AUM's of Forage Produced.

Alt	Livestock AUMs Produced	Permitted Livestock AUMs	Change in AUMs Available for Big Game
1	16,477	20,131	- 3,654
2	24,716	20,131	+ 4,585
3	21,626	20,131	+ 1,495
4	19,909	20,131	- 222

Alternative 1 would provide the least amount of forage over the long term. The net result would be an 18% reduction in the available forage. This will require a reevaluation of the current grazing allocation in order to meet Forest Plan Standards. Alternative 2 would provide enough forage over time to maintain the current permitted AUM's of livestock. There would be an additional amount of forage available for big game. Alternative 3 would also maintain current livestock AUM's with additional forage available for big game. Alternative 4 comes very close to maintaining the existing condition. The potential negative 222 AUM's resulting from this alternative are +- 1% of current AUM's and are not considered significant enough to require any specific management actions to rectify.

Another part of the purpose of the proposal was to maintain a diversity in the successional stages

and canopy covers of sagebrush and to maintain diversity in successional stages of aspen stands. The following table is a consolidation of the analysis and graphics presented earlier in this chapter and in Chapter 4.

Table II-6. Percent of the Sagebrush Communities by Successional Stage.

Alt	Early	Mid	Late
1	0	0	100
2	36	9	55
3	18	9	73
4	12	6	82

Alternatives 1 and 4 are the least responsive to the purpose. While the full range of successional stages is represented, the balance is weighted most heavily toward advanced age classes and canopy covers. Alternatives 2 and 3 represent a more balanced distribution of successional stages and canopy covers with Alternative 2 providing the most even balance.

Aspen stands will be treated at approximately the same rate in proportion to sagebrush acres in all action alternatives. The one real comparison that can be made is the gradual loss of aspen that will result from the no action alternative. As noted in chapters 3 and 4, aspen stands will be replaced by conifer or sagebrush/grass communities. Their contribution to the overall diversity of habitats will be lost. Species such as ruffed grouse which depend heavily on aspen and successional diversity within aspen would be adversely affected. Since ruffed grouse are so closely tied to aspen communities, it is suspected that reductions in the habitat would result in reductions of grouse populations within the project area.

Antelope:

Concern about the effects of the proposal on antelope habitat was an important element of the wildlife issue. The antelope habitat suitability index was used to measure the effects relative to the concern. The following table presents the changes that will occur to antelope habitat.

Table II-7. Changes in Antelope Habitat Suitability.

Alt	Existing Condition (1.0 Possible) Projected Futu	
1 2 3	.65 .65 .65 .65	.52 .82 .84 .78

Alternative 1 would result on an overall decrease in antelope habitat quality. Alternatives 2,3, and 4 would all improve the habitat quality. With only six points of difference between the highest and lowest rating, one can't speculate that any particular action alternative is significantly better than another.

From a more general perspective, it can be surmised that the action alternatives will positively benefit antelope and as a minimum, maintain current populations. Alternative 1, No Action does result in decreased habitat quality but whether the populations will adversely suffer is difficult to predict. It is not known whether the existing habitat is occupied to capacity or whether other factors such as hunting are keeping populations below habitat capacity.

Mule deer:

The following effects are a summary of the analysis displayed in Chapters 3 and 4. The biological needs of the deer herd on summer range will generally be met in all alternatives. Fawning cover and forage (browse and forbs) are adequate and it is suspected would remain so even if no burning would take place. The deer will respond favorably to the flush of forage, particularly forbs, that would be present in the recently burned areas. However, no changes in populations are expected to result from the summer range habitat alterations.

Mule deer effectively utilize sagebrush for hiding and bedding cover. As more openings are created, vulnerability to hunting is increased. Alternative 1 would retain the most sagebrush in late successional stages and provide the best cover for deer. Vulnerability would be the least affected in this alternative. Alternative 2, with the greatest acreage of grassy openings created and maintained over time, would result in the greatest increase in vulnerability to hunting. Alternatives 3 and 4 would be very similar to Alternative 1 in relation to vulnerability.

It is therefore suspected that Alternatives 1, 3, and 4 would have no measureable effect on mule deer populations or structure of the herds. While difficult to quantify, it is suspected that Alternative 2 could have an adverse effect on the populations and structure of the deer herds in the project area.

Elk:

The impacts of the proposal on elk habitat, primarily calving habitat, was a major element of the wildlife issue. Concentration areas of calving elk were derived from information provided by MDFWP. This information served as the basis for analysis of effects on elk calving.

The primary index of measure relative to this issue was the number of acres that would be burned within the calving areas. The following table displays that comparison.

Table II-8. Acres Burned Within Elk Calving Areas.

Year	Alt 1	Alt 2	Alt 3	Alt 4
Fall 91/Spring 92 Fall 92/Spring 93 Fall 93/Spring 94 Fall 94/Spring 95 Fall 95/Spring 96 Fall 1996	0 0 0 0	833 1196 165 267 70 82	553 677 165 135 350 82	553 80 165 349 70
Total	0	2613	1962	1217

From a numerical standpoint, alternative 1 would have no impact on elk calving areas as no sagebrush cover would be removed. Alternative 2 would remove the greatest amount of sagebrush cover and impact elk calving areas the most.

Alternatives 3 and 4 would have progressively lesser impacts to calving areas. These numbers however, have little meaning without application of some qualitative analysis. Details of such analysis are presented in chapter 4 but are summarized here.

Available research neither confirms nor refutes that elk need sagebrush for calving. It has been observed that calving areas in this project area are in or near the spring green-up zone which does contain significant stands of sagebrush. It has also been observed that elk populations continued to increase in the 1970's and 1980's despite the extensive spraying projects when very large acreages of sagebrush were removed in a very short time frame. It has also been observed, that given a choice, elk may prefer to calve in sagebrush.

In terms of sagebrush recovery, the burning cycle established in alternative 4 rates best as it provides the greatest amount of time between burns and allows the sagebrush to obtain heights and densities that provide cover. The burning cycle established in alternative 2 is the least desireable from a sagebrush recovery standpoint as more acres are kept in early successional stages.

Given the observations and magnitude of the effects discussed however, it is suspected that none of the action alternatives will result in any measureable adverse impacts to elk calving success, elk populations, or herd structures.

Sage Grouse:

The impact of burning on sage grouse habitat and populations is a major element of the wildlife issue and the index of measure is to describe the changes that will occur in the habitat. The following comparisons are qualitative in nature as no meaningful quantitative measurements could be designed.

None of the action alternatives will impact either of the most critical habitat components, winter range, and breeding areas (leks). It is suspected the grouse in the study area winter in Idaho. There are no leks currently inventoried in the study area. Grouse populations have fluctuated widely in the past, though they have never been high. Current populations are low and appear to be stagnant. The current distribution and condition of the sagebrush on National Forest lands does not appear to be a limiting factor for grouse. See Chapter 3 Existing Conditions.

The relative effects of the alternatives on sage grouse habitat are summarized below. The detailed analysis and literature researched are noted in Chapter 4.

Alternative 1 allows the natural succession of sagebrush habitats. As the sagebrush reaches maturity, and if canopy covers close to 30-40%, sage grouse use could be discouraged. Given the low current populations of grouse, this effect is not expected to be significant as there will be adequate areas in the successional stages and canopy covers that provide good grouse habitat. As the canopy covers close, the production of forbs, an important grouse food, will decrease. As canopy covers close and grass production declines, livestock may be forced into heavier utilization of riparian areas. Riparian areas are very important grouse feeding sites for the insects and forbs they produce. A decline in the quality of riparian areas results in a parallel decline in their value as feeding sites for grouse. At the present, the condition of riparian areas and grouse food production are not limiting.

Ultimately, the result of alternative 1 would be a general decline in the overall quality of grouse habitat. It is not expected that this decline would be severe enough to retard grouse recovery in the area.

Alternative 2 has the greatest potential to adversely impact sage grouse habitat. Under this alternative, with a burning cycle of 10 years, large areas of sagebrush will be maintained in early successional stages. The early successional stages will be marginally useful for cover or nesting.

Alternative 3 offers the best potential to improve sage grouse habitat through providing a good mix and distribution of successional stages of sagebrush. Sage grouse habitat needs would be

provided to the greatest degree over the long term in this alternative.

Alternative 4 offers some potential to improve sage grouse habitat but to a lesser degree than alternative 3. The primary difference is in the greater area of late successional stages with heavier canopy covers that are maintained in this alternative.

All of the action alternatives could reduce the quality of riparian feeding sites by burning the adjacent sagebrush cover. Mitigation measures discussed previously will compensate for this potential impact in all alternatives.

In general, it is suspected that none of the impacts are of such significance that the habitat quality will be severely affected. It is not expected that the alternatives will measureably deter the recovery of sage grouse in the project area nor will the alternatives measureably impact the current populations of sage grouse in the area.

The following table offers a summation of the previous discussions.

Table II-9. Expected Changes to Sage Grouse Habitats and Populations.

Habitat Element	Alt 1	Alt 2	Alt 3	Alt 4
Forb Production	(-)	(+)	(+)	(+)
Riparian Feeding Areas	(-)	(0)	(0)	(0)
General Habitat Quality	(-)	(-)	(+)	(+)
Short Term Impacts on Population	(0)	(0)	(0)	(0)
Long Term Impacts on Recovery	(0)	(0)	(0)	(0)

- (-) = a general decline or negative trend.
- (+) = a general increase or positive trend.
- (0) = a neutral response, essentially no noticeable or measureable change.

Non-game and Small Game Habitats:

Concern about the effects of the proposal on non-game and small game habitats was a major element of the wildlife issue. An index of measure was defined which would measure the changes in habitat diversity and what the changes would mean in terms of small game and non-game species diversity.

Aspen is an important element of habitat diversity. Ruffed grouse are very dependent on aspen. Species of vireos and sapsuckers also have direct dependencies on aspen for feeding and nesting. Other species such as western bluebird are secondary cavity nesters in aspen.

Alternative 1 is the least responsive of the alternatives in maintaining diversity in the aspen components. No aspen would be treated and the stands would continue to deteriorate and eventually die out. Populations of ruffed grouse, vireos, and sapsuckers could be expected to decline as the stands are lost. Cavity nesting opportunities for bluebirds would eventually be lost as available cavity nesting trees fall and no live aspen are available as replacements.

Alternatives 2 and 3 are very similar in the rate of aspen treatment. These alternatives are the most responsive to the purpose and need by maintaining a diversity of successional stages in aspen and in maintaining aspen as a key habitat element well into the future. At a minimum, it is suspected that these alternatives will provide the diversity and distribution of aspen necessary to maintain current populations of dependent and associated species.

Alternative 4, with a much slower rate of treatment will not get to some of the decadent stands in time and they may be lost. The rate of loss is not expected to be significant and any effects on dependent and associated species is expected to be minor.

Sagebrush communities provide habitats for a wide range of non-game species. For purposes of this analysis, some representative species of song birds were selected to represent the change in species diversity that could occur in conjunction with changes in habitat diversities.

The changes displayed in the following table are relative changes and are intended to portray the trends that could occur as the successional stages of sagebrush vary between the alternatives.

Table II-10. Relative Reaction of Selected Species to Habitat Changes.

Species	Alt	Alt	Alt	Alt
	1	2	3	4
Brewer's Sparrow Grn-tailed Towhee Vesper Sparrow Longspurs Western Meadowlark Horned Lark Mourning Dove Sage Thrasher	(++) (++) (++) () () () (+)	() (0) (++) (+) (++) (+) (-)	(+) (+) (0) (0) (0) (0) (0) (+)	(+) (+) (0) (-) (-) (-) (-) (++)

- (+) = A potential increase in population from the existing condition.
- (-) = A potential decrease in population from the existing condition.
- (0) = No change or essentially maintaining the existing populations.

It is not expected that any of the alternatives will completely eliminate the habitat of any sagebrush associated or dependent species from the project area. The overall mosaic will continue to provide all habitat elements for the species currently present in the study area but there would be some expected trends or shifts in populations of individual species.

As shown in the table, alternatives 1 and 4 would provide more of the late succession habitats which would favor the species needing closed canopies and generally heavier stands of sagebrush.

Alternative 2, with the shortest burning cycle would result in more open grassland acres over time

and would favor those species needing the more open habitats. Alternative 3 would essentially maintain the current condition for most species. Alternative 3 would provide the best blend of open feeding areas and adjacent sagebrush cover over time. Alternative 4 does not provide as balanced a grass/sage ratio as alternative 3. Alternative 4 is probably closest to reflecting what the conditions within the burn units would be if natural fire were allowed to burn. Alternative 4 is the best representation of what natural vegetative and wildlife diversity would be.

Landscape Diversity:

The effect of the alternatives on landscape diversity is a significant issue. As discussed here and in chapters 3 and 4, landscape diversity refers primarily to how the area will look over time. In this context, landscape diversity is a visual quality question. Indices of measure for landscape diversity use many of the same features as the indices for wildlife, i.e. successional stages of sagebrush and canopy covers. Analysis and discussions relative to these two issues are therefore closely related.

Table III-1 in Chapter 3 displays the existing condition of the study area for all vegetation and other landscape components. Of the components described in the table, sagebrush/grass, conifer, and aspen would be affected by the proposal.

Through analysis of the action alternatives, it is apparent that the rate of aspen and Douglas-fir treatment would result in essentially no noticeable change in the landscape over time. Aspen stands comprise only 3% of the study area and only 2% of the stands would be treated annually. The major contribution of the action alternatives would be to maintain aspen as a part of the landscape for it's scenic and habitat values.

There are 95,664 acres of conifers, primarily Douglas-fir in the study area. Treatment of 80 acres of encroachment (.08% of conifer forest) per year along the edges of the forested areas will be virtually un-noticeable from a landscape perspective.

Alternative 1, no action, would have a much different effect, particularly in relation to aspen. As aspen

stands continued to die out, they would eventually disappear or be a much smaller component of the landscape. The seasonal color provided by aspen, and the pleasant contrast of patterns and form provided by the aspen in a landscape generally dominated by low level sagebrush and grass would be lost. In the coniferous forest component of the landscape, the effects of no action would be much less evident. The rate of conifer encroachment into the sagebrush is a relatively constant but slow process. Given the large acreage of conifers present, and the distribution of the stands throughout the study area, it is suspected that the gradual incursion of the conifers into the sagebrush would not be noticed.

The effects of the alternativess on the sagebrush/ grass component of the landscape are much more measureable. Table III-2 displays the existing condition of the sagebrush/grassland in terms of canopy cover densities. Chapter 4 displays the changes in canopy covers that will occur in each alternative. The following table is a summary of those discussions and offers a quick comparison of those changes.

Table II-11. Acres in Canopy Cover Classes By Alternatives.

Class	Exist- ing	Alt 1	Alt 2	Alt 3	Alt 4
0-5%	8251	0	9072	6048	4536
6-10%	8821	0	9072	6048	4536
11-15%	14557	5271	3003	9051	7539
16-20%	8378	26355	15015	15015	19551
21+%	2161	10542	6006	6006	6006

As shown in the table and discussed in detail in chapter 4, alternative 1 will provide the least landscape diversity over time. Sagebrush stands will continue to progress successionally. Sagebrush canopies will eventually close, grassy openings will be lost. The landscape would generally be dominated by sagebrush.

Alternative 2, with sagebrush burning occuring at the fastest rate over time would result in a landscape dominated by a more open grassy appearance. There would be scattered patches of sage in the burn units that the fire did not hit. Alternative 3 would provide the most even mix of canopy covers and diversity of all the action alternatives. No single canopy cover class would appear to dominate the landscape. The landscape would appear as a mixing of open grassy areas interspersed with moderately dense to dense stands of sagebrush.

Alternative 4, with the slowest rate of burning would result in a landscape similar to alternative 3 but with a trend toward dominance by the older and more dense stands. There will still be grassy openings visible but they will be fewer in number and more widely distributed in the project area.

In summary, all action alternatives provide and maintain a broad range of successional stages and canopy cover densities within the landscape. No single successional stage or canopy cover class will totally dominate to the exclusion of others. Alternative 1 would result in a landscape dominated by sagebrush and is probably the least desireable from a diversity perspective. A landscape containing a blend of irregularly shaped grassy openings and sagebrush stands distributed or appearing as a random mosaic would be more pleasing to the eye than one dominated by sagebrush. The question of which action alternative may be best from a landscape diversity perspective however, is difficult to quantify. From a subjective standpoint, alternative 3 would provide the best balance of sagebrush and grassy openings over time. This assumes that acheiving a balance in the landscape is important to the viewer. Where observing more grassy openings in proportion to sagebrush is important, alternative 2 would be best. Where a view dominated by sagebrush is important, alternative 1 or 4 would be best.

Table II-12. Comparison of Alternatives Summary.

Measurement Indices	Alt 1	Alt 2	Alt 3	Alt 4
Wildlife				
Antelope Habitat Index (Existing = .65)	.52	.82	.84	.78
Antelope Habitat Quality	Decrease	Increase	Increase	Increase
Acres Burned in Elk Calving Areas	0	2613	1962	1217
Overall Effect on Elk Populations, Herd Structures	0	0	0	0
Overall Quality of Sagegrouse Habitat	Decrease	Decrease	Increase	Increase
Overall Change in Mule Deer Habitat	0	Decrease	0	0
Total Pounds of Forage Produced After 10 Yr Period	25,703,150	38,556,000	33,735,650	31,058,150
Change in AUMs Available for Other Resources	- 3654	+ 4585	+ 1495	- 222
Landscape Diversity				
Maintenance of Aspen	Could Lose	Maintains	Maintains	Maintains
Acres of Sagebrush in Burn Units (Years 1-5)	0	14,994	8312	5766
Acres Actually Blackened in Mosaic	0	7497	4156	2883
Percent of 42,168 Acres of Sagebrush Blackened	0	18%	10%	7%
Percent of Alternatives in Major Successional Stages Early Mid Late	0% 0% 100%	36% 9% 55%	18% 9% 73%	12% 6% 82%



CHAPTER III

Affected Environment



CHAPTER III -- AFFECTED ENVIRONMENT:

General Introduction:

This chapter describes the existing condition of the environment that may be affected by the proposed action and alternatives. The Forest Plan management direction is briefly described followed by descriptions of the specific resources that will be affected.

The project area is located 35 miles south of Ennis, Montana in the Antelope Basin and Westfork Madison areas of the Madison Ranger District, Beaverhead National Forest. See Vicinity Map.

Forest Plan Management Direction:

The general management direction for the Beaverhead National Forest is found in the Forest Plan. Chapter II describes forest-wide goals, objectives, and standards. Chapter III describes the goals, objectives, and standards for sub-units of the forest referred to as Management Areas. The following discussions highlight the forest-wide and management area goals, objectives, and standards that are most relevant to the proposed action analyzed in this FEIS.

Forest-wide Goals, Objectives, and Standards:

The Forest Plan establishes a forest-wide goal to recognize and promote the intrinsic ecological and economic value of the wildlife and fisheries resources on the Beaverhead National Forest. This will be accomplished by providing diverse habitats to maintain viable populations of all native wildlife species to ensure diversified recreational opportunities and ecological stability (Chap II, page II-1).

Under Forest-wide objectives in wildlife, maintenance and enhancement of wildlife habitat has high priority in the management of the Forest. Viable populations of all existing wildlife species will be maintained by providing a diversity of habitats throughout the Forest. Habitat improvement projects including prescribed burning will be

scheduled as appropriate to improve or maintain desired habitat conditions (Chap II, page II-3).

Vegetative diversity is important in maintaining suitable habitat for the wide array of wildlife species occurring on the Forest. Providing for vegetative diversity involves maintaining or developing over time an adequate number of acres of successional stages within each major vegetative community. Also important is maintaining specific habitat features necessary to individual species and groups of species (Chap II, page II-4).

The forest wide goal for grazing management is to provide opportunities for use of forage at or above currently permitted levels of use while protecting or enhancing fishery habitat, riparian areas, recreation and other forest resources (Chap II, page II-2).

A forest wide objective for domestic livestock is to keep the potential permitted animal unit months (AUM's) at about the same as currently permitted. Another objective is to identify non-structural range improvement opportunities such as use of prescribed fire to address sagebrush and Douglas fir encroachment (Chap II, pages II-8 and 9).

Forest wide objectives for fire provide for the use of prescribed fire to increase livestock and big game forage and facilitate stand reproduction in aspen (Chap II, page II-12).

The protection of other resource values while achieving the purposes of the proposal is provided through application of standards specific to the resources. The following standards (Forest Plan, Chap II, pages II-25 thru 42) apply throughout the area and are especially important to this proposal. For purposes of brevity, a summary or key feature of the standard is presented.

Wildlife Standards:

- 1. Involve appropriate Montana Department of Fish, Wildlife and Parks personnel during project planning and implementation.
- Utilize Agricultural Handbook No. 553,
 Wildlife Habitats in Managed Forests, for



- guidance in identifying strategies for management of various wildlife habitats.
- 4. Monitor indicator species to measure the effects of management activities on representative habitats. Sage Grouse is the management indicator species for sage brush communities.
- 12. Design of vegetative manipulation projects and grazing systems will consider potential impacts on wildlife, especially critical use areas such as calving and nesting areas.

Fisheries Standards:

Maintain instream fishery habitat for spawning, rearing and adult life stages.

Watershed Standards:

- All projects affecting or suspected of affecting the watershed resource will incorporate Best Management Practices in project design and implementation.
- Water quality will be maintained or improved in accordance with State and Federal Standards.
- Best Management Practices will continue to be developed and refined during the environmental analysis process.
- 5. Projects involving significant vegetation removal will require a preliminary watershed cumulative effects analysis.
- Adequate riparian vegetation will be left along water bodies for shade, streambank stability, pool quality and to filter overland flows.

Soils Standards:

 All projects affecting or suspected of affecting the soils resource will incorporate Best Management Practices into project design and implementation. 2. Management activities will be designed to sustain site productivity.

Air Quality Standards:

 Management activities affecting air quality will comply with Federal and State standards.

Range Standards:

- Prescribed fire or other approved methods will be used for control of sagebrush and tree encroachment as needed to maintain or increase forage available for livestock and wildlife.
- 5. Livestock forage utilization on secondary range that is also key big game habitat will be managed to maintain reasonable wildlife populations as determined through coordination with MDFWP.

Fire Management Standards:

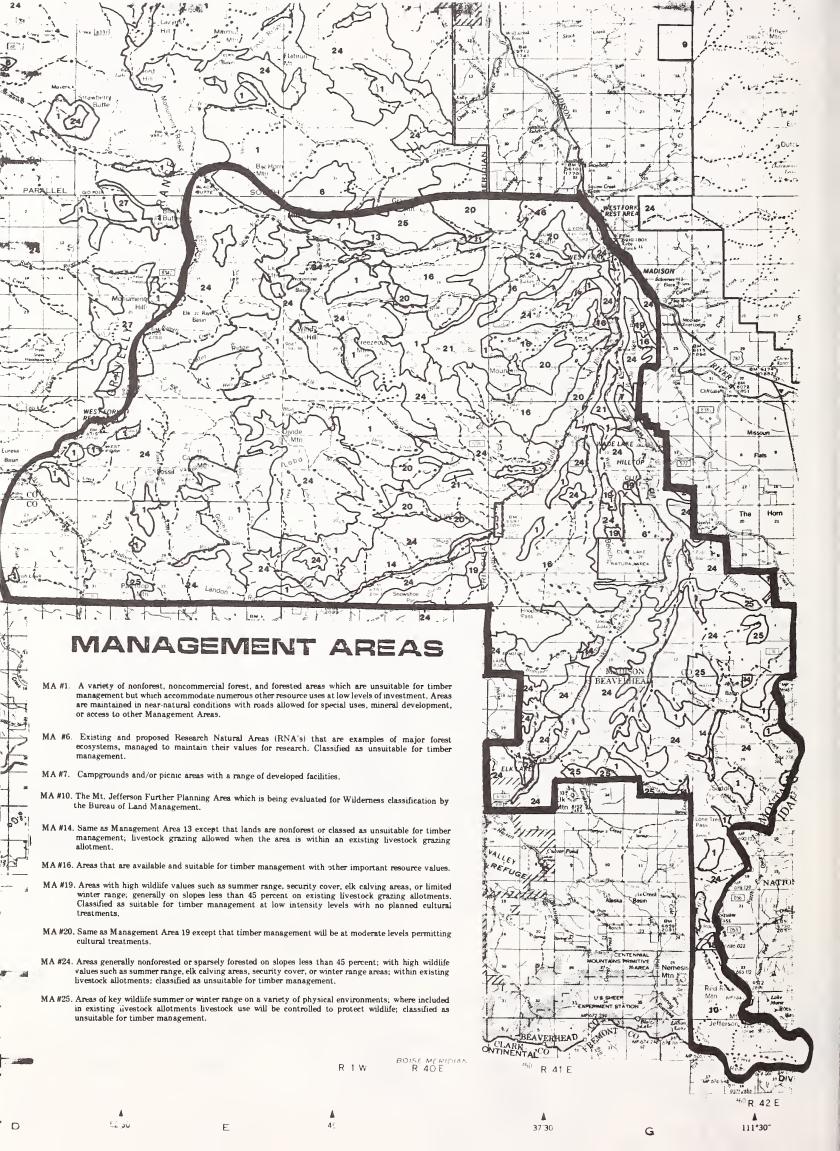
 Prescribed fire will be used as appropriate to achieve management goals such as rejuvenation of rangeland vegetation and wildlife forage species and control of encroaching vegetation.

Management Area Goals, Objectives, and Standards:

In the Beaverhead Forest Plan, Management Area (MA) prescriptions found in Chapter III, include goals and management direction to achieve the Forest-wide goals, objectives, and standards found in Chapter II of the Plan.

Most of the burning proposals lie in MA 24, with a few in MA 1 and MA 14. Refer to the Management Area Map.

MA 24 lands are described as generally nonforested or sparsely forested. They contain significant wildlife habitat values and are within existing livestock grazing allotments. The lands contain the most productive and heavily used portions of range allotments and are suitable for high intensity range management practices. These areas generally have high livestock capacity and high levels of



investment programmed for structural and nonstructural improvements. These lands also include some of the most valuable acres of wildlife winter range, elk calving areas, security cover, and summer range with opportunities for wildlife habitat improvement.

The management goal for MA 24 is to protect and enchance wildlife habitat condition while maintaining or improving range vegetative condition and livestock forage productivity through management and cultural practices.

MA 1 lands are generally described as being a variety of nonforest, noncommercial forest, or forest lands unsuitable for timber production. Wildlife habitat values are high in some portions of the MA and domestic livestock grazing occurs on rangelands.

The management goals for MA 1 lands provide for custodial management with low levels of investment. Existing investments will be protected and where appropriate, maintained through low cost, low intensity improvements.

MA 14 lands are wetlands consisting of seeps, springs, and wet areas which are nonforested or unsuitable for timber management. These lands often contain key habitat components and have high wildlife values. Domestic livestock grazing occurs in existing allotments.

The management goals for MA 14 lands allow opportunities to maintain and improve wildlife habitat and water quality while permitting livestock grazing and some recreation opportunities.

Protection of other resource values while achieving the goals of the MA's is provided through application of standards specific to the MA. Management Area standards especially important in relation to this proposal are found in Chapter III of the Forest Plan (pages III-2 thru 4 for MA 1, pages III-44 thru 46 for MA 14, and pages III-76 thru 78 for MA 24).

MA 24 Standards:

Habitat Improvement:

Wildlife habitat improvements such as prescribed fire may be implemented so long as they are consistent with livestock management objectives.

Range Improvement:

Cultural practices and vegetative manipulation, including burning will be allowed to maintain or enhance forage production or species composition consistent with meeting wildlife habitat management objectives.

Prescribed Fire:

Prescribed fires can be used to increase range forage production and address encroachment by Douglas fir. In key wildlife areas, wildlife forage needs must be met. Prescribed fire can also be used to enhance the quality of wildlife habitats.

MA 1 Standards:

Habitat Improvement:

Wildlife habitat improvement projects will generally not be developed unless needed to correct existing habitat degradation.

Range Improvement:

Existing improvements will be maintained and new improvements will be allowed to facilitate management or protect existing resource values.

Prescribed Fire:

Prescribed fires with planned or unplanned ignitions may be used as resource improvement tools.

MA 14 Standards:

Habitat Improvement:

Habitat improvement projects including road management, prescribed fire, structures, and other techniques will be used to maintain or enhance wildlife habitat quality where compatible with other MA goals.

Prescribed Fire:

Prescribed fire, with planned and unplanned ignitions, may be used for range and wildlife habitat improvement.

Description of the Affected Environment:

Wildlife:

Affected Area:

The area that will be analyzed for direct and indirect effects is the 42,168 acres of sagebrush communities in which burning is proposed. Cumulative effects will be analyzed within an area of approximately 161,170 acres encompassing the entire Antelope Basin area and the southern end of the Gravelly Range in the West Fork Madison area.

In these 2 areas, sagebrush/grassland with aspen and conifer patches dominate the landscape and wildlife habitats are diverse. The nine lakes in the area, (Conklin, Cliff, Wade, Elk, Smith, Goose, Otter, Blue, and Hidden) provide habitats for species found nowhere else on the Beaverhead. Conklin Lake is privately owned. Of particular importance is the Trumpeter swan which nest and winter on several of the lakes. The Trumpeter swan is listed as a sensitive species for the Beaverhead, (Caring For Our Natural Community, Region 1) and also as a management indicator species for marshland communities in the Forest Plan.

The study area provides habitat for mule deer, antelope, elk, and moose for spring through fall seasons. Calving and fawning areas for these species are present. The study area also provides habitats for a wide variety of small mammals and songbirds.

Past Management:

Past activities that have contributed the most to existing habitat conditions are domestic livestock grazing and other vegetative manipulation projects.

Sagebrush and grassland communities have been grazed for many decades. In the 1960's and 70's, large acreages of sagebrush were sprayed to increase forage production. Recent sagebrush burns, 6000 acres in the past 5 years, are very attractive to antelope, deer and elk, as they readily take advantage of the early greenup and highly nutritious forbs and grasses erupting from the burn. During these same periods and into the 80's, several thousand acres of wyethia were sprayed. Treatment of aspen stands was initiated around 1982 and since that time, approximately 200 acres of decadent aspen have been regenerated by burning or cutting. Refer to the Vegetation section in this chapter for more detailed descriptions of these elements.

Big game hunting and road management are additional activities that influenced wildlife habitats and populations. As per the current Interagency Visitor Map, the entire study area is being managed as an area restriction with many specific roads and trails also restricted seasonally or yearlong to motorized use.

Existing Condition:

Big Game:

The following discussions will describe the existing conditions of habitats for mule deer, antelope, and moose. Elk conditions will be discussed within the section covering management indicator species.

Mule deer habitat is provided throughout the study area but is primarily spring, summer and fall range. Mule deer use the sage in the summer and fall for cover though they do not appear to be dependent on the brush for food. This is probably due to the presence of more palatable, more succulent forbs during that part of the year. During hunting season, the sage can provide good hiding cover on an otherwise exposed hillside or flat. There is no permanent winter range in the West Fork or Antelope Basin areas. The nearest winter range for deer is near the mouth of Horse Creek south of the Wall Creek Game Range. Deer also migrate from Centennial Valley to wintering areas in Madison River moving parallel to the chain of lakes, staying close to the timber along

Hidden Lake Bench, Deer Mountain, and Spring Branch.

Antelope are found throughout the sagebrush and grassland areas. Spring, summer and fall range is provided. There is no antelope winter range in the study area.

Existing habitat suitability is described using the U.S. Fish and Wildlife Habitat Suitability Index model. This model calculates suitability of habitat based on several factors including height of vegetation, shrub canopy cover, distance from water, grazing use by livestock, topographic diversity, and diversity of forbs and forb canopy cover. Currently, the habitat is rated at .65 out a possible 1.0.

Studies in Wyoming and Colorado have shown that stands of sage taller than 30 inches covering more than 30% of an area tend to block an antelope's vision and cramp its sprinting style. Sage in the south Gravellies may approach 30 inches in height but that would probably be maximum for most plants.

Raynolds Pass is heavily used by antelope during migration from the Madison River drainage into Idaho. Lone Tree Pass in Antelope Basin is used by antelope going between the Centennial Valley and the Madison drainage.

The West Fork and Antelope Basin drainages provide yearlong habitat for moose. In the fall and winter, moose will spend most of their time in and around the riparian zones.

Non-game Species:

The study area contains a broad diversity of habitats for non-game species. Habitat needs for non-game species (food, cover) do not generally differ from big game species however, the needs can often be met over a much smaller areas. For this reason, species that are more directly related to sagebrush, grassland, and aspen communities will be discussed.

Brewer's sparrow is a sage dependent species found in the Gravellies sagebrush stands. Other

birds found in the sage stands which are "nearobligates" include green-tailed towhee and vesper sparrow. These 2 species are very common in this area. The open grassland areas provide habitats for species such as longspurs, meadowlark, horned lark, and mourning dove.

Aspen communities provide habitat for species such as warbling vireo and sapsuckers. These two species are almost exclusively dependent on aspen and would be the first to leave should an aspen stand deteriorate or die out.

Beaver are found throughout the study area. While they are a game animal (fur bearer) from the standpoint of being regulated, we chose to discuss them here as their habitat needs again, are generally more localized. Current beaver populations appear to be suppressed from a combination of trapping and habitat changes. Regulation of trapping is outside the responsibility of the Forest Service as well as beyond the scope of this analysis. Habitat conditions are within the control of the Forest Service.

Beaver habitat is confined to riparian areas. Within the study area, the riparian areas important to beaver contain willow or willow/cottonwood/aspen complexes. The aspen component is the element most affected in this analysis. Aspen provides an important food source and construction material. Many of the aspen stands in the area are reaching advanced ages and in some cases have died out. Maintenance of healthy aspen stands is an important element of maintaining or improving beaver activity and populations in the area.

Management Indicator Species:

The method of using indicator species is based on the assumption that by managing habitat in a way that allows viable populations of these species to develop and sustain themselves, we will provide for populations of all vertebrate species dependent on those habitats (Beaverhead Forest Plan, p.II-1). A "viable" population is one of sufficient size, structure, and distribution to sustain normal rates of recruitment and genetic diversity without requiring immigration.

Elk:

Elk are identified on page Il-26 of the Forest Plan as the Management Indicator Species for big game species.

The elk in the Gravellies are part of the Gravelly/ Snowcrest herd. Summer range covers approximately 5,000 square miles from Centennials to the south, Blacktail to the west, to the north end of the Gravellies and east to the Madison River.

The Montana Fish Wildlife and Parks has been conducting an elk study in which calving locations have been mapped. The Antelope Basin area contains a relatively scattered distribution of locations. No particularly high concentrations have been identified, although it appears that the heads of Antelope, Anthill, and Poison Creek drainages contain the largest numbers of relocations. In the West Fork area, high concentrations of locations are found on the south facing breaks between Teepee and Lobo Creek. Details of the study and mapped calving locations are available in the project file.

Ken Hamlin, Montana FW&P biologist in charge of the elk study emphasized in a Sept. 20, 1990 letter to the Forest Service that the radio relocations represent "general" areas of importance but do not say anything about areas with no relocations. The 764 relocations however are by far and away the best data that is available showing elk calving areas.

A series of prescribed burns in October of 1986 removed 1500 acres of sagebrush on Elk Mountain. Radio locations subsequent to that burn has not indicated any calving changes in and around the burn.

Present elk populations are at the Montana Fish Wildlife and Parks goal of 7000 - 7500 for the Gravellies Planning Unit. One important point to note is that the elk population continued to increase following the large sagebrush spraying program in the area during the 1960's and 1970's. It appears that the sudden reduction in sagebrush did not adversely effect the elk's upward population trend. State population estimates made for the Wall Creek and Blacktail-Robb-Ledford each spring

during the 1960's and 1970's spray program also showed an upward trend with the end result being a near doubling of elk populations at the end of the program.

Elk are at the highest densities in the West Fork area in the upper elevations where cover, water, and seclusion from man permits a relatively unharried existence. Sagebrush near the conifer stands appears to be used by the elk for calving and a minor amount of feeding. Elk, being primarily a grazer rather then a browser, tend to use sage as a minor component of their diet except during winter when the grasses and forbs become more difficult to reach. During harsh, deep snow winters, sage becomes critical to both deer and elk as grass becomes nearly impossible to reach. For this reason, sage becomes very important on critical winter ranges.

The majority of the elk migrate out of south end of the Gravellies to Wall Creek and west to the Blacktail Management Area. Elk do winter in small herds in the West Fork during mild winters. Some of this area would be considered winter range for mild winters, but not for normal or severe winters. A map is enclosed with this document delineating winter range.

Predation and hunting pressure were also reviewed as factors in the condition of the elk herds. Conversations with state biologist Terry Lonner have indicated that predation on elk calves in the Gravellies is not and has not been a problem. Hunting pressure in the West Fork is very high. Road hunting is very popular as is hunting from horseback in upper Elk River and West Fork. The current population and structure of the elk herd is more a factor of hunting than of habitat conditions.

Pine Marten:

The pine marten is the management indicator species for spruce/alpine fir old-growth communities. Marten are resident in the project area even though there are very few stands of spruce/fir that contain old growth characteristics. In lieu of this, martin are using mixed-species stands of mature timber dominated by Engelmann spruce and alpine fir. They prefer stands with abundant coarse woody debris on the forest floor which helps

maintain a complex subnivean (under-snow) environment in winter. Habitat blocks of this sort occur in the upper elevations of the Gravellies. Marten also forage extensively in stands of over-mature and old-growth lodgepole pine, which are adequately represented here.

There is little direct population data on pine marten. The majority are undoubtedly located in the upper elevations in the older conifer stands. Sagebrush and Savannah/grassland habitats are of little value to pine marten. There are no direct, indirect, or cumulative effects to pine marten expected from the burning proposals.

Sage Grouse:

Sage grouse are identified in the Forest Plan as the management indicator species for sagebrush communities.

Sage grouse populations appear to have gone through some wide fluctuations over the past several decades. Current populations are low and seem to be stagnant.

Historical records of state regulations show widely fluctuating regulations based on occurrance of the grouse. The early 1940's appeared to be an all time low population. In 1942, the state reintroduced sage grouse in Madison County in an effort to re-establish grouse in the valley. In 1945 the state had a closed season statewide on sage grouse due to low populations. By the 1960's, the populations had rebounded somewhat though since that time, it has declined once again.

In a joint field examination with Montana Fish and Game Department in 1970, and during the course of range analysis work prior to spraying, there was no evidence of any sage grouse in or near the spray areas. (2240 Multiple Use Survey Report signed March 8, 1971). The report states "We do not anticipate any adverse impact on upland game birds from this spray project." Apparently the grouse population was low prior to the 70's spraying.

The large spray projects likely contributed to the decline in populations between the 60's and 70's. There are other factors which also may have

contributed to the decline and the subsequent slow recovery of the populations.

Present habitat is deficient in brood habitat for sage grouse. There are very limited riparian areas in Antelope Basin and West Fork which are important feeding sites. No leks (breeding sites) have been located within the drainage.

Another limiting factor for the sage grouse populations appears to be the development of critical winter range. Many of the Centennial Valley grouse migrate to Idaho south of Monida Pass. Many of the sage bottoms in Idaho have been recently converted to irrigated pasture. While the winter range of the sage grouse from Antelope Basin and West Fork is not known, it is suspected the birds may also migrate to Idaho. Several winter surveys in 1989 and 1990 failed to locate any wintering birds in the analysis area.

Considering the increasing acreage of sage in the Gravellies and the low stagnant population of grouse, it is doubtful that condition of the sage itself is the present limiting factor.

Goshawk:

Goshawk is identified in the Forest Plan as the management indicator species for old growth Douglas-fir habitats.

There are no known goshawk nests within the project areas though they undoubtedly nest in the douglas fir and pine stands in the upper elevations. The general area appears to support a small but consistent goshawk population. Goshawks make use of complex mixed-species stands of large trees (lodgepole, spruce, alpine fir, as well as Douglas-fir).

While predominantly a forest bird, goshawk will occasionally hunt meadow edges for small mammals and will, on occasion, use aspen stands for hunting or nesting.

Trumpeter Swan:

The trumpeter swan is identified in the Forest Plan as a management indicator species for marshland communities. The swan is also listed

as a sensitive species for the Beaverhead National Forest. (Caring for our Natural Community, Region One).

Trumpeter swan nest on Elk lake (two historical nest sites) and also have historically nested on Goose Lake. Swans will winter on the south end of Cliff Lake until the lake freezes over. Conklin Lake, a privately owned lake in Antelope Basin, has a swan nest every year on it. In 1990, four young were hatched, and two birds fledged. Their activities are completely restricted to the lake until after fledging.

Sensitive Species:

Sensitive wildlife species that may be in the area include the boreal owl, harlequin duck, ferruginous hawk, trumpeter swan and the western big-eared and spotted bats. Trumpeter swan were discussed above.

Boreal owl probably are present in the upper elevations though none have been found. The birds typically are found in old growth lodgepole or spruce.

Western big-eared bat and spotted bats may be present but there has been very little data gathered on these species either on the Beaverhead or in other areas within their ranges.

Spotted bats appear to be primarily desert dwellers. The most probable range in Montana occurs in south central and southeastern portions of the state. They possibly could occur on the south end of the Gravelly Range but non have been observed in the project area.

Western big-eared bat is likewise unknown as to its presence in the Gravellies. They occupy a wide range of habitats from arid to high elevation mixed coniferous forests. All of southwestern Montana and the Beaverhead are in their potential range. Possible roost sites include caves and abandoned mine shafts. No western big-eared bats have been observed in the project area.

Personnel at the Red Rock Lakes National Wildlife Refuge were also contacted and they have no

records of the two species of bats being found within the refuge.

Harlequin duck is not known to have ever been present in Gravellies.

It is not expected that any of the action alternatives will impact the boreal owl, spotted bat, western big-eared bat, or harlequin duck. None of these species have been observed in the project area and their probable habitats will not be affected.

Ferruginous hawk are present in the West Fork and are fairly common. They are known to be nesting in the sagebrush dominated hillsides in the Patchtop Mountain, Landon Ridge, Snowshoe Pass areas of the Westfork Allotment. They are quite common in the Centennial Valley to the south. Cottontails and jackrabbits comprise most of the bird's prey biomass. Nesting preference is for trees in shrubland/grassland habitat though they will nest in stream bottoms or on the ground where trees are not available.

Threatened & Endangered Species:

The Forest Plan lists four Threatened/Endangered indicator species: peregrine falcon, bald eagle, grizzly bear, and grey wolf. These same species were also identified by the U.S. Fish and Wildlife Service as being potentially in the drainage and should be considered in the analysis (Sept. 14, 1990 letter). The species are also listed in the Region 1 publication, "Caring for our Natural Community".

Grizzly Bear - Threatened Species:

Grizzly bear habitat is excellent in the Gravellies, but due to past human interaction, the grizzly is considered an incidental user. Habitat types which seem to be preferred are Festuca idahoensis/ Agropyron spicatum, Geranium viscosissimum, Campanula rotundifolia, Geum triflorum for the grassland/shrublands, and Abies lasiocarpa/ Calamagrostis rubescens, Abies lasiocarpa/ Vaccinium globularae or V. scoparium in the forested areas. The berry crops and whitebark pine seeds are seasonal food sources which are heavily used on good years. The locations of these vegetation types are for the most part in

higher elevations in the Gravellies and along the riparian zones. The Gravellies are not listed in a Situation Management Area, though approximately one sighting every two years is reported.

Grizzly bears have been occasionally reported near Wade Lake and one reported just south of Antelope Basin in 1987. In 1990, a grizzly bear was found in the Granite Mountain area and a grizzly was also seen at Cliff Lake and later in the summer in the campgrounds of Cliff and Wade Lake. The Gravellies are not within a recovery area despite its history of sightings and its close proximity to other recovery areas. (Targhee National Forest land to the south of the Antelope Basin area is in Situation 2.)

This area has not been analyzed through the grizzly bear habitat process, but it appears that the Cliff Lake Natural Area, Deer and Elk Mountain, and Red Rock Mountain areas have the potential to hold bears for part of the year. Conflicts with grazing and the transportation system probably are the limiting factors for the grizzly bear in these areas.

Since the listing of the grizzly bear on the T&E species list, there has been one confirmed man-caused grizzly bear mortality in the Gravellies.

Grey Wolf - Endangered Species:

Wolf have been regularly reported in the Gravelly and Tobacco Root ranges, the last report being two years ago on the Madison District. A total of 180 sightings have been reported on the Beaverhead since 1964. Most sightings have been one or two animals, with young rarely seen. No pack activity has been reported so it is suspected the population is probably low with only immediate families scattered throughout the drainage if present at all. This is similar to the estimate given in the 1926 Grazing Management Plan for Madison National Forest where it states an estimated five or six wolves are present in the Upper Ruby/ Gravelly Range.

Bald Eagle - Endangered Species:

Since the spring of 1988, bald eagles and other raptors around the chain of lakes have been studied in an effort to make a nest plan for each of the eagle nest sites. A detailed description of existing condition and desired future condition will be written in the nest plan. Listed below however is some of the information gathered at this time.

Results from this years' research indicate a lack of alternate nest trees for ospreys, stemming from the lack of old yet healthy trees near the lakes. Nest trees for eagles are probably adequate. Habitat can probably support up to 4 nesting pairs of eagles.

The Lost Mine Canyon trail currently passes close to one of the active eagle nests and poses a conflict during nesting season. Current regulations allow both foot and trail bike use on the trail. The trail was moved in 1990 to reduce disturbance.

The Antelope Prong and Neely's arm of Cliff lake are important fishing areas for both nesting and immature eagles during the spring rainbow and sucker spawning runs. Eagles immediately leave the Antelope Prong feeding area when anyone use the Lost Mine Canyon trail which crosses the creek. This disturbance is of short duration however, as eagles will return within 1/2 hour.

Peregrine Falcon - Endangered Species:

Peregrines are occasionally reported in the area, though none have been found nesting. To the south of the forest, there are several pairs of peregrines which have been hacked (artificially planted into the wild) in addition to a natural pair near Centennial Valley. Because of the close proximity of these birds plus the abundance of waterfowl in the chain of lakes, there is a good possibility of peregrines nesting on the forest either now or in the near future.

The lynx and wolverine are two candidate T&E species that may use habitats in the project area, but neither has been reported by trappers or field biologists in recent years.

Landscape Diversity:

Affected Area:

The affected area includes the 161,170 acres of land found within the West Fork/Antelope Basin analysis area. The proposed action is confined to the 42,168 acres of sagebrush/grass vegetation in the West Fork/Antelope Basin area. Lessor areas of open conifer/grass and aspen will also be treated. Areas to be treated are located in the southern half of the study area. Approximately half of the units are in Antelope Basin with the other half found in a band two to three miles wide following the West Fork of the Madison river. A detailed description of this vegetation can be found in the vegetation section of this chapter.

Past Activities:

With landscape diversity tied to the vegetation of an area, any manipulation of the different vegetation types will cause a change in diversity. Past activities affecting the sagebrush/grass vegetation which have occurred in the area include livestock grazing, sagebrush and Wyethia treatment with herbicides and fire, aspen treatment and conifer encroachment treatment. For more detail on these past activities refer to the vegetation and livestock sections of this chapter. Another factor that has affected the current landscape diversity of the area is past and current wildfire suppression activities. As discussed in the vegetation section of this chapter due to the lack of natural fire the sagebrush/grass, aspen and open conifer vegetation is in quite a different state than would naturally be found in this area.

Existing Condition:

Landscape diversity as defined in this document is "the geography of different ecosystems across a large area and the connections among them." (USDA Undated). Overall landscape diversity in the West Fork/Antelope Basin area is quite high. The vegetation runs from grassland and wet meadows, to sagebrush/grass slopes, to willow and aspen stands, to open conifer/grass stands to dense coniferous forests. The topography of the area is as varied as the vegetation. There are high open plateaus, mesas and rough rocky

mounatinous terrain, large open valley bottoms and high flat benches and open basins. The area includes the West fork of the Madison river, Standard Creek and the Chain of lakes; Elk Lake to Smith Lake. The elevations range from 6,000 feet on the lower West Fork of the Madison River to over 10,000 feet on the Gravelly crest.

The general cover types for the West Fork/Antelope Basin area are summarized in Table 1 below.

Table III-1.
Cover Types by acres*
West Fork/Antelope Basin area
Total acres in study area--161,170

Total acres in study area To 1,170		
Non-Forested	60,152	37%**
Water Rock Marsh Meadow Browse(Willow) Sagebrush/grass Grassland	1,256 2,670 167 1,239 1,331 42,168 11,321	<1% 2% <1% 1% 1% 26% 7%
Forested	101,018	63%
Conifer Open Canopy Closed Canopy Aspen	95,664 18,793 76,871 5,354	59% 12% 48% 3%

- * Acres are compiled from the Districts Timber Stand Data Base and Allotment Management Plans.
- ** Percentages are based on total acres in study area.

Table 1 gives a general idea of the landscape diversity but does not begin to show how these broad catagories are interspersed throughout the area. In general the northern half of the study area is dominated by a closed canopy, dense conifer forest with scattered patches of aspen and small openings of sagebrush/grass, grassland and meadow vegetation. In the southern half of the area this is reversed. The landscape is dominated by large open basins and high flat benches of sagebrush/grass and grassland

vegetation with scattered patchs of dense conifer forest and aspen.

Landscape diversity is not confined to the placement and connections of these broad catagories within an area. There is diversity within each catagory. As an example, on a large forested slope there are variations in tree density and structure. Different tree species will produce different color shades and textures. All these differences combine to produce a landscape diversity within the forested hillside. This is also true for the sagebrush/grass vegetation.

Landscape diversity within a vegetation type is generally dependant on the density and structure, vertical and horizontal, of the dominant vegetative layer, ie. trees, shrubs, grass. Landscape diversity is not static but is constantly changing. Between the major vegetation types changes are slow. Changes within a vegetation type like the sagebrush/grass can be fairly rapid.

The current diversity in the 42,168 acres of sagebrush/grass vegetation is mainly due to past management activities. With the Sagebrush in the area growing only 1 - 4 feet tall the vertical structural variability is not very great. The main element that affects the landscape diversity in the sagebrush/grass type is the density or canopy cover of the sagebrush along with the horizontal structure or placement of the plants. Canopy cover for the sagebrush/grass type in the West Fork/Antelope Basin area break out as follow.

Table III-2. Canopy Cover for the Sagebrush/grass type

CANOPY COVER	ntelope Basin Area ACRES		
0% TO 5% 6% TO 10% 11% TO 15% 16% TO 20% 21% +	8,251 8,821 14,557 8,378 2,161		
TOTAL	42,168		

Again, this only gives a general view of how the sagebrush/grass type is broken out and does not

show how the different canopy covers are distributed throughout the study area. These figures are not static. Those stands currently having 0% to 5% canopy cover will over time generally increase their sagebrush cover, moving toward the heavier catagories. The current appearance of these sites. 0%-5% canopy cover, is one of an open grassland with scattered shrubs. The shrubs may be scattered individually throughout the area or found in small clumps interspersed across the site. As canopy cover increases, up to 15%, the general appearance of the site changes to a shrub dominated site with scattered patches of grassland. The open grassy patches are still an obvious component and may be interconnected. When canopy cover increases over 15% to 20% the open patches become smaller and will eventually become inconspicuous. These sites appear as shrubland stands with few small open pockets of grasses and forbs. The open pockets generally are open and do not interconnect.

This general description is as if you were viewing a distant slope or were looking down from a hill top. As site distance decreases and topography flattens the general appearance will compress toward the higher canopy covers. Sites will seem to have heavier canopy covers than they actually do. Sites with canopy covers of 10% to 15% will appear as heavy stands of shrubs with few grassy openings.

Aspen is found scattered throughout the area providing its' seasonally changing contribution to the overall landscape diversity. The current condition of the aspen stands and the potential changes that may occur in the West Fork/Antelope Basin area are describe in the vegetation section of this chapter.

The encroachment of conifers out into the sagebrush/grass vegetation adds to the overall diversity of the landscape. It provides for an increase in the structural variation on the site. Currently the encroachment is found in narrow bands along the edges of the sagebrush/grass vegetation. There are some sites that are encircled by heavier timber that have become completely dominated by conifers. In comparing aerial photography from the late 40's and 50's to current photos it can be seen that many area viewed as sagebrush/

grass vegetation with scattered conifer encroachment in the 50's are now dense conifer stands. Sites where conifer encroachment is currently found can be seen as open sagebrush/grass areas with no conifers in the 50's.

As stated earlier this situation only increases the landscape diversity of the area but given time these sites will develop into dense conifer stands. At that time there would be a reduction in the diversity in the area. This is the natural succession for the site in the absence of natural wildfires. The past wildfire suppression activities has allowed many of the sites viewed as open conifer/sagebrush sites in the 50's to develop into the dense stands currently found. This process will continue until those sites currently with scattered conifer encroachment have developed into closed canopy conifer forests. If a catastrophic event such as fire, wild or prescribe, occurs on the site this process will be setback. The appearance of the site after fire would depend on its' intensity. Generally a hot intense fire would kill most trees and revert the site back to a open grassland site. Lighter intensity fires would usually produce an open park like stand of conifers/grass.

Vegetation:

Affected Area:

The proposed action would affect the sagebrush/ grass, open conifer/grass and aspen vegetation types located within management areas that allow the use of prescribed fire for range and wildlife habitat improvement. Within the West Fork and Antelope Basin area this includes MAs 1, 14, and 24. Direct affects of the alternatives would occur in these areas.

Vegetative cover in the study area is quite varied, with open grasslands and wet meadows, to sagebrush/grass slopes, to willow and aspen complexes and open conifer/grass stands to dense coniferous forests. Topography is varied and includes the West fork of the Madison River bottom, large open valley bottoms, high flat benches and open basins to high plateaus, mesas and rough rocky mountainous terrain. Elevations range from 6000 feet on the lower West fork of the Madison to over 10,000 feet on the Gravelly crest. The

proposed action would occur from 6000 to 8300 feet. Stands proposed for burning will predominately be in the Sagebrush/grass vegetation type. Some stands of open conifer/grass and aspen are also proposed for burning. Within any of these stands small portions of open grassland, meadows or willow may be found. These vegetation types may be treated along with the sagebrush.

See Table 1 in previous discussion for a summary of the general vegetation types in the West Fork/Antelope Basin area.

Within the study areas 42,168 acres of sagebrush/ grass vegetation type, four species of sagebrush are found. The dominant species for the entire area is Mountain Big Sagebrush, Artemisia tridentata spp. vaseyana. This is the species for which the fire treatment is targeted. Basin Big Sagebrush, Artemisia tridentata spp. tridentata, is found south of the study area in the Centennial Valley. Three Tip Sagebrush, Artemisia tripartita, and Silver Sagebrush, Artemisia cana, are found throughout the area but generally at very low densities. Both species may sprout after fire: for this reason sites where either species dominate generally have been excluded from treatment. The one remaining species, Alkali Sagebrush, Artemisia longiloba, is found in very small, scattered patches toward the western edge of the study area. Acreage of this species is limited and no treatment is planned.

Although sagebrush is the dominant shrub in the area a variety of other shrub species are associated with it. On the moist end of the vegetation type we also find Wood's Rose, Rosa woodsii and Mountain Snowberry, Symphoricarpos oreophilus. Toward the drier end of the type Snakeweed, Gutierrezia sarothrae; Rubber Rabbit-brush, Chrysothamnus nauseosus; Green Rabbit-brush, Chrysothamnus viscidiflorus; and Gray Horse-brush, Tetradymia canescens are found associated with sagebrush. These species do not occur in any great abundance within the study area. All of these shrubs do sprout after fire with the later four species known to greatly increase in coverage after fire.

The dominant grass understory species for the West Fork/Antelope Basin area is Idaho Fescue. Four other grasses fill out the major graminiod

species in the area, Bluebunch Wheatgrass; Mountain Brome, Bromus carinatus; Western Needlegrass, Stipa occidentalis; and Bearded Wheatgrass, Agropyron caninum. Other usually conspicuous species include Junegrass, Koeleria cristata; Raynold's Sedge, Carex raynoldii; and Sandberg's Bluegrass, Poa sandbergii.

Within the Gravelly range we find a very high number of forb species associated with sagebrush. Of the forb species Sticky Geranium, *Geranium viscosissimum*; Soft Cinquefoil, *Potentilla gracilis*; and Silky Lupine, *Lupinus sericeus* dominate. Other common species include Rose Pussy-toes, *Antennaria microphylla*; Prairie Smoke, *Geum triflorum*; Hood's Phlox, *Phlox hoodii*; and Rocky Mountain Helianthella, *Helianthella uniflora*. In localized areas in the upper reaches of the West Fork and high drainage basins in Antelope Basin the broad leaved forb Wyethia or Mulesear, *Wyethia amplexicaulis* and *W. helianthoides*, may dominate.

Following Mueggler and Stewart, "Grassland and Shrubland Habitat Types of Western Montana" the Sagebrush/grass vegetation in the study area would fall into four habitat types (h.t.) with one phase described. The major h.t. for the study area is Big Sagebrush/Idaho Fescue(Festuca idahoensis). The wetter end of this h.t. can be further split into the Sticky Geranium (Geranium viscosissimum) phase. With on going soil/ecotype mapping in this area additional phases may be described to break out sites which support Silver and Three Tip Sagebrush intermixed with Big Sagebrush. The Big Sagebrush/Bluebunch Wheatgrass(Agropyron spicatum) h.t. is located on the dry, steep, south facing slopes toward the lower end of the study area. This is a minor h.t. in the area. The Three Tip Sagebrush/Idaho Fescue h.t. found in the southeast end of the study area also has a limited distribution. The Alkali Sagebrush sites found in the study area would fall within the Low Sagebrush (Artemisia arbuscula) / Idaho Fescue h.t..

The few open conifer/grass sites that are considered for treatment are where Douglas Fir (*Pseudotsuga mensiesii*) has encroached out into the Sagebrush/grass vegetation. The majority of the encroachment at this time is confined along the edges of the sagebrush/grass vegetation type but

some stands have been completely dominated by conifers. Approximately 1622 acres of conifer encroachment have been identified within burn units. This encroachment, in the absence of fire. is the natural progression for these sites. The habitat type most likely to develop on those sites currently dominated by conifers is a Douglas Fir/Pinegrass (Calamagrostis rubescens) (Pfister and others 1977). This is similar to conifer stands currently growing adjacent to the units. If the natural succession for these sites continues; in the absence of fire; the Douglas-fir canopy will fill and outcompete the sagebrush/grass species. As the conifer overstory closes the shrub, graminoid and forb species now present on the site would be replaced by more shade tolerant species such as Pinegrass, Elk Sedge(Carex geyeri), and Heart-leaf Arnica(Arnica cordifolia).

Aspen(Populus tremuloides) is found scattered throughout the West Fork/Antelope Basin area. Approximately 5,354 acres of aspen are mapped in the area. Stands range in size from small half acre clones to large 10-20 acre stands. Understory vegetation can be quite varied in aspen stands. The understory can be multi-layered with a shrub, graminoid and forb layer or be restricted to only a graminoid or forb layer dominated by one species. Some of the more common plant species are, Mountain Snowberry, Oregon Grape(Berberis repens), Mountain Brome, Blue Ryegrass(Elymus glaucus), Sticky Geranium and Wyethia. Many stands also contain scattered conifers, generally Subalpine Fir(Abies lasiocarpa), Douglas Fir or Lodgepole Pine(Pinus contorta). The condition of the aspen in the area is quite varied. Aspen is maintained on many sites by natural catastrophic events such as fire. In the absence of such events the natural succession for the sites would be the replacement of the aspen with conifer or sagebrush/grass vegetation.

Past Activities:

The entire study area is grazed by livestock and has been for well over eighty years. Nineteen grazing allotments are located within the West Fork/Antelope Basin area. Currently all allotments are under an approved allotment management plan, which may be reviewed at the District office. Most of the allotments are under a deferred or

rest rotation grazing system, many of which have been in place for over twenty years. The West fork and Antelope Basin areas provide forage for 4717 cow/calf pairs, 40 horses and 6700 ewe/lambs for a total of 25,169 AUM's. See the Livestock Management section of this chapter for more detail.

From 1959 to 1980 a very aggressive program of Sagebrush and Wyethia control was undertaken in the West Fork and Antelope Basin areas. During this time 21,168 acres, or approximately 50%, of the Sagebrush type and 5,520 acres of Wyethia were treated. Many of these acres were treated more than once. The majority of the Sagebrush was treated in the late 60's and early 70's. The Wyethia was treated mainly from the mid 70's to the early 80's. At the time of treatment Sagebrush canopy cover was quite heavy. No measurements were taken prior to spraying but study plot photos show canopy coverage that would generally measure from 20-30%. The spray used was 2,4-D mixed in a diesel carrier. Post treatment surveys generally showed 90% + kill on the Sagebrush. The objective of both the sagebrush and wyethia treatments was the eradication of both target species within the treatment area. The Sagebrush was unwanted due to its' competition with desirable forage species. Wyethia control was done for watershed protection reasons. After treatment a very large increase in forage production occurred. Very little detailed measurements of the forage increase were completed after the spray projects. From reviewing the studies done and field notes after the projects, increases in production averaged approximately 1.4 times pre-treatment; three years after spraying. Even with the increased forage production no increases in stocking occurred.

From 1982 to 1988 a Sagebrush burning program has been in operation in the West Fork and Antelope Basin area. A total of 6491 acres were burned during this time. The majority of the burned acres(4397) are in Antelope Basin . The burning program was initiated due to the return of Sagebrush back to pre-spray densities. Management goals for the prescribed burns were to reduce Sagebrush density by approximately 60%. Prescriptions were written to produce a mosaic of burned and unburned sagebrush within a unit. Measurements of pre and post burn forage production

show a 2.0 - 4.0 times increase; two to three years after treatment. Again increases in forage production were not used to increase stocking on any of the grazing allotments.

To date very little control work has been undertaken to limit the conifer encroachment into the sagebrush/grass vegetation. Less than forty acres have been treated to set back the establishment of conifers. This treatment was in conjunction with past sagebrush control efforts and have been confined to the narrow ecotone between conifer stands and open sagebrush/grass.

Until recently aspen treatment was completed in the same manner as conifer encroachment, in conjunction with prescribed fires for sagebrush control. Only a limited number of stand where treated and generally only the edge of the stand was affected. Overall from 1982 to 1988 fewer than fifty acres of aspen where treated. Aspen response in these areas has been good. In 1989 field surveys were started to collect data on aspen stand conditions. Stands were evaluated and a program begun to treat the more decadent stands. Stands were manually treated by cutting down all mature live trees in a stand. Since 1989, 165 acres have been treated in this manner. All stands have been within the Antelope Basin area. Initial results have shown good sprouting of the aspen.

Existing Condition:

Vegetation conditions within the study area are generally good with static or upward trend. Condition and trend is measured by a variety of methods. The most extensive information available on the areas vegetation is from older Range Analysis data that is based more on forage value for livestock. This data were collected from permanently located Parker Three Step transects, paced transects and ocular reconnaissance. Habitat type classification and mapping is more reflective of site potential than the older range data. Current mapping and analysis is based on this principle. Data collected using the "Ecodata" sampling method provides a variety of sampling intensities from permanently located nested frequency plots for condition and trend studies to subjectively located ocular plots for vegetation

description. Some habitat type mapping has been completed in the area.

Ecodata sampling has indicated that much of the Sagebrush/grass type in the study area is in a mid to late seral condition. Approximately half of the sagebrush/grass vegetation in the study area has had some type of sagebrush control work done in the last 20 to 30 years. 78% of the type never had or has had no cultural treatment in over 20 years. 16% has been treated in the last ten years, this reflects 6491 acres of prescribed burns. Sagebrush has reestablished following the major spray projects of the 60's and 70's. Canopy cover in many areas is back to pre-spray levels. The canopy cover of the Sagebrush in these areas currently range from 15% to 25%. In some of the areas sagebrush appears to be in such density that forage productivity and landscape diversity is less than desirable. Sagebrush stands with a canopy cover of 15% can make hiking in the area awkward, canopy cover of 20% to 30% make movement thru the area very difficult. Canopy covers for the sagebrush/grass type in the West Fork/Antelope Basin area are summarized in the preceding landscape diversity discussion.

Aspen is found scattered throughout the study area. Stands range in size from small half acre clones to large 10-20 acre stands. The condition of the aspen in the area is quite varied. Some factors affecting the Aspen are the general stand age averaging 50 years, natural vegetation succession to conifer dominance and livestock/wildlife utilization. Aspen is maintained on many sites by natural catastrophic events such as fire. In the absence of such events the natural succession for the sites would be the replacement of the aspen with conifer or sagebrush/grass vegetation. Aerial photo interpretation from 1947 to 1987 show a large reduction (40%-50%) in the amount of aspen in the two areas. Field surveys completed in Antelope Basin in 1989 show one half of the 258 acres sampled in jeopardy of dying out in the near future. Stands had no substantial or healthy regeneration and nearly all had some conifer encroachment. Field reconnaissance in the West Fork suggest similar conditions.

In reviewing old photos and field observations it is evident that in the West Fork/Antelope Basin area

the ecotone between the forest and sagebrush/ grass vegetation types has expanded. Conifers, mainly Douglas Fir, have become established in the Sagebrush/grass type. The potential habitat type of these areas would be Douglas Fir/Pinegrass (Pfister and others 1977). Generally the suppression of natural fires over the years has allowed the conifers to establish. If allowed to proceed toward the potential climax, without fire, the sites would develop into a fairly dense stand of Douglas Fir pushing out the Sagebrush/grass vegetation that is currently occupying the site. If a wildfire of any size would burn through the stand the site would revert back to an open grassland or park-like stand of scattered Douglas Fir (Fischer and Clayton 1983).

The current overall vegetative makeup of the area with large expanses of dense sagebrush, decadent aspen and conifer encroachment can be attributed partially to the lack of natural fire. Research done in southwest Montana and Yellowstone National Park(Arno & Gruell 1983, Arno & Gruell 1986, Gruell 1983, Houston 1973) suggest a natural fire occurrence of 20 to 45 years. Much of this research was conducted in timbered areas, the fire frequency in the adjacent sagebrush/grass vegetation may have been even shorter. The frequent fires would have caused the area to be dominated by open grasslands with sagebrush and conifers confined to drier, rocky sites which do not produce sufficient fine fuels to carry fire. As noted by Arno and Gruell (1986) "Early narratives cite extensive, smooth grasslands in the Monida Pass and Henrys Lake-Raynold Pass areas, whereas today dense stands of sagebrush are prominent there."

Current and past fire suppression activities have allowed succession to progress uninhibited. Sagebrush cover has increased in the area and conifers have moved out into the open sagebrush/ grass vegetation. Given time, with the absence of fire, the sagebrush canopy will close. As the canopy cover increases grass and forb vigor will decline along with forage production (Tisdale and others 1969) It has been theorized that if these dense sagebrush stands remain untouched by fire they would naturally break up and produce a mosaic of small opening and dense shrubs (Wambolt, personnel communication). As the sagebrush canopy opens, grass and forb vigor and production

may return. No research has been completed to suggest a time frame for this undisturbed natural progression.

Studies on sagebrush control using fire and herbicides show a 30 and 15 year life, respectively, of the different treatments (Harniss and Murray 1973, Johnson 1969, Wambolt and Payne 1986). Most studies were conducted to measure the affect of the sagebrush treatment over time. Treatments were planned to maximize the reduction of sagebrush and increase forage production. Harniss and Murray (1973) show a very slow increase in sagebrush and a large increase in grasses and forbs for the first twelve years after

the burn. The next 18 years show a substantial increase in sagebrush and a reduction in the grass/forb components. The sites treated with herbicides showed a similar progression but at a faster rate.

The results of these studies and the vegetative succession after sagebrush treatment on the Madison District show similar trends. For the first five to ten years after sagebrush treatment the sagebrush density is fairly low, 5%-10% canopy cover. Grass and forb vigor and production would be high. The general appearance of the site would be of an open grassland with scattered sagebrush.

The following photograph represents the appearance of an area up to 10 years following treatment.



Photo 1.

Burn unit in the lower West Fork area two years after treatment.

In the next five to ten years, 11 to 20 year after treatment, the sagebrush density shows a substantial increase. Sagebrush canopy would be filling, grass and forb production would peak and start to decline due to the increased canopy cover of

sagebrush. Canopy cover would range from 10% to 15%. The area would appear as a sagebrush dominated site with pockets of grasses and forbs scattered throughout.

The following photograph represents the appearance of an area 11 to 20 years after treatment.



Photo 2.

Burn unit near Elk Lake treated in late 1960's.

As the site gets 20 to 30 years past treatment the sagebrush will become dense and be similar in appearance to pre-treatment conditions. Sagebrush canopy cover will range from 15% to 20%. Grass and forb vigor and production will be lower

due to the competition with the sagebrush. The overall look of the site will be of a fairly dense stand of sagebrush with only small pockets of grasses and forbs.

The following photographs represent the appearance of an area before treatment and 20 to 30 years after treatment. These photos were taken from the same point within a study plot.



Photo 3a.

1959 photo of area in Upper West Fork immediately prior to treatment.

The treatment accomplished approximately 90% kill on the sagebrush.



Photo 3b.

1988 photo of same area approximately 29 years after treatment.

Threatened, Endangered and Sensitive Plants:

Twenty three species of sensitive plants are known or suspected to occur in the Beaverhead National Forest (USDA undated, USDA 1989, Zook personal communication 1988). Three species have been found within the West Fork/Antelope Basin area. Keeled Bladderpod, Lesquerella carinata, and Wolf's Willow, Salix wolfii var. wolfii, have been found in the study area but both sites are well distant from any proposed burn units. A very small population of Yellow Springbeauty, Claytonia lanceolata var. flava, was found this spring in a Sagebrush/grass community. The site has a high occurance of Silver Sagebrush and has been eliminated from the burn proposal. Sensitive plant surveys are continuing in the study area. General habitat, location and status are:

Yellow Springbeauty, Claytonia lanceolata var. flava occurs in moist, mid to high elevation montane meadows from 5,500 to 10,000 feet. The population found in the spring of 1990 is located near a small saddle between Moss and Tepee creeks. Other populations known in the state are from Deerlodge, Gallatin and northern Beaverhead counties. It is classified as "sensitive" by the Northern Region, and has a "C2" status with the U.S. Fish and Wildlife Service. C2 or Category 2 status means current information indicates that proposing to list as endangered or threatened in possibly appropriate, but substantial biological information is not on file to support an immediate ruling.

Keeled Bladderpod, Lesquerella carinata occurs on bare soil in grasslands and other open habitats, often in calcareous areas from 4,500 to 9,500 feet. The known population in the study area is located on the summit of an unnamed peak in the Centennial mountains. Due to the condition of the specimen from this population its' identification is currently uncertain. Other populations known in the state are from Granite county. It is classified as "sensitive" by the Northern Region, and has a "3C" status with the U.S. Fish and Wildlife Service. A 3C status means that the species have proven to be more abundant or widespread than was previously believed, and/or those that are not subject to any identifiable threat.

Wolf's Willow, *Salix wolfii var. wolfii* occurs along streambanks and in wet meadows from 8,000 to 9,000 feet. The population located within the study area is located southeast of Black Butte. Other populations in the state are found in Deerlodge county. It is classified as "sensitive" by the Northern Region, and has no status with the U.S. Fish and Wildlife Service.

Of the remaining sensitive plants, a review of the various habitats, as well as a review of occurrence reports eliminated all but five species from possibly occurring in the study area. Two species of this group may occur in Sagebrush/grasslands, the targeted habitat of the proposed project. These species are:

Jackson's Hole Thistle, *Cirsium subniveum* occurs in Sagebrush/grasslands and meadows from 6,000 to 8,000 feet. It has been identified just south of the project area in the Centennial Valley. It is classified as "sensitive" by the Northern Region, and has no status with the U.S. Fish and Wildlife Service.

Jove's Buttercup, *Ranunculus jovis* occurs in Sagebrush/grasslands to forested slopes from 7,500 to 9,500 feet. Jove's Buttercup has been found in the Centennial Mountains south of the project area. It is classified as "sensitive" by the Northern Region, and has no status with the U.S. Fish and Wildlife Service.

The three other species that may occur in the study area generally occur in moist meadows to swampy or boggy soils which should not be found in any of the proposed treatment sites. These three species are:

Showy Pussytoes, *Antennaria pulcherrima* occurs on hummocks, and around shrubs, in swampy or boggy soils from 4,000 to 7,000 feet. It has been identified in the Centennial Valley south of the project area. It is classified as "sensitive" by the Northern Region, and has no status with the U.S. Fish and Wildlife Service.

Idaho Sedge, *Carex idahoa* occurs in wet meadow in regions of calcarious parent material from 6,500 to 8,500 feet. Idaho Sedge has been identified in mountainous areas southwest of the project area.

It is classified as "sensitive" by the Northern Region, and has a "3C" status with the U.S. Fish and Wildlife Service.

Alpine Meadowrue, *Thalictrum alpinum* occurs on hummocks beneath low shrubs in moist, alkaline meadows from 6,500 to 7,000 feet. It has been found in the Centennial Valley southwest of the project area. It is classified as "sensitive" by the Northern Region, and has no status with the U.S. Fish and Wildlife Service.

Water and Fish:

Affected Area:

Portions of three watersheds comprise the affected area for these resources. The West Fork of the Madison River is the major tributary of the Madison below Hebgen Lake, draining an area of approximately 225 sq. mi. of the Gravelly Range. Antelope Creek (approximately 20 sq. mi.) is located to the southeast of the West Fork, and is a major tributary of Cliff Lake. Elk Creek (approximately 13 sq. mi.) is located to the south of the West Fork, and flows directly into Upper Red Rocks Lake.

Each of these drainages is part of a different major basin. The West Fork enters the Madison River, which is a major tributary of the Missouri, about 120 miles downstream. Elk Creek is also in the Missouri system, but reaches Three Forks through the Red Rocks, Beaverhead and Jefferson Rivers, about 300 miles downstream. Cliff Lake, the receiving water for Antelope Creek, has no surface outlet. It is, in effect, a closed basin. Due to the fact that the waters of these drainages do not confluence until many miles downstream from the project area, and in the case of Cliff Lake not at all, a cumulative effects assessment in terms of water and fish for the entire project area is not possible or warranted. An assessment of effects at the mouth of the respective drainages will provide an adequate picture of the situation.

The Preliminary Project Analysis and Study Plan for the West Fork Barometer Watershed (USDA, 1966) provides an excellent view of the physiography and climate of the West Fork. The drainages are typical of high elevation watersheds in the West, where streamflows are low and relatively

constant during much of the year. Peak runoff periods occur in response to snowmelt in May and June, and during these times it is common for stream discharges to increase tenfold.

Most stream channels are stable, and reflect the geologic variability and climate of the area. An exception is the main channel of the West Fork, which has unstable banks along most of its length. It is a high sediment producer, and contributes a large concentration of fines annually to the Madison river. A major source of this fine material is a number of high river terraces of alluvial origin downstream of Teepee Creek (USDA, 1966). Lisle (1972) calculated that 98% of the total sediment load of the West Fork was suspended sediment, and of that load, 47% was from lateral erosion of the streambanks.

A portion of the project area is located on the foothills adjacent to the mainstem of the West Fork. Much of this area is made up of river terraces, depositional features that were formed during previous geologic eras. Drainage density on these features is relatively high, as is delivery potential to the West Fork. In Antelope Creek, most of the possible burning sites are on the uplands, and delivery potential to streams is low.

Past Management:

Prior to the early 1960's, the predominant management activity in the proposed project area has been livestock grazing. Early grazing placed little emphasis on resource protection, and as a consequence many areas in the drainage were overgrazed. The effects of this activity are still evident on the upper slopes and in many of the drainages. Early sheep grazing in the upper portion of the West Fork led to soil compaction and surface erosion. Lisle (1972) concludes that this effect is the cause of current channel widening in the West Fork. General overgrazing by cattle and sheep was responsible for the decline of forage and the general vigor of the plant community. Cattle use along the riparian zone of the West Fork contributed to bank instability and sediment production (USDA, 1966).

In the early 1960's, more intensive livestock management was instituted. Sheep allotments in

the upper watershed were combined, permitted numbers were reduced, and more intensive management systems initiated. On cattle allotments, permitted numbers were reduced, seasons shortened, and rest-rotation and deferred rotation systems initiated. The spraying of sagebrush provided additional forage (USDA, 1966). The net result of these changes was to improve watershed conditions throughout the drainage to a level that they are maintained at today.

Roadless Areas:

Affected Area:

The roadless area that will be affected by the proposed action is the 95,098 acre Freezeout Mountain area 1-029. This area is described in Appendix C to the Forest Plan on pages C-404 thru C-420.

The Forest Plan established Forest-Wide multiple use goals, objectives and management area requirements as well as management area prescriptions. The analysis of roadless lands, documented in Appendix C, described each roadless area, the resources and values considered, the range of alternative land uses studied, and the effects of management under each alternative. As a result of the analysis, some roadless areas were recommended for inclusion in the National Wilderness Preservation System and others were assigned various non-wilderness management prescriptions. The Freezeout Mountain Roadless Area was assigned to Management Areas: 1, 14, 16, 20, 21, 24, and 25.

These Management Areas contain a mix of resource management emphases. The following table is a comparison of the acres and percent of the roadless area in a specific emphasis. See Appendix C, page C-412.

Table III-3. Roadless Area Management Emphasis.

EMPHASIS	ACRES	% OF ROAD- LESS AREA
Timber	4,354	4 %
Recreation/Custodial	29,088	31 %
Range and Wildlife	61,656	65 %

There are two separate units of the Freezeout area. The 65,794 acre unit 1-029A is located on the east slopes of the southern portion of the Gravelly Range. It contains the West Fork of the Madison and Elk River Drainages. The Elk River area is characterized by deep canyons and steep rocky sideslopes. The West Fork of the Madison drainage in the south is characterized by rolling foothills and long, moderately steep sideslopes. The dominant terrain feature in this area is 10,171' Lion Mountain near the north boundary. The northwestern and south central portions are generally forested with the major species being lodgepole pine, Douglas-fir, and Englemann spruce. The southwestern portion is more open with approximately two thirds of the area being grassland or sagebrush/grassland communities and the remaining third being forested.

The 29.304 acre unit 1-029B is located southwest of 1-029A in the Antelope Basin area. Elk and Hidden Lakes and the southern portion of Cliff Lake lie within this unit. The terrain is characterized by large, gently sloping benches except for a deep, steep-sided rocky canyon that contains Hidden and Cliff lakes. Vegetation on the benches is approximately half forested and half grassland parks. The forested areas are primarily lodgepole pine and Douglas-fir. On the north slopes at mid elevation ranges, the vegetation is primarily grassland and sagebrush/grassland interspersed with patches and stands of Douglas-fir and aspen. The Cliff Lake Research Natural Area, designated in May, 1952, is located in the north portion of 1-029B.

Unit 1-029A is separated from other roadless areas in the Gravellies by the Gravelly Range

Road on the west boundary and the Standard Creek road on the north boundary. Unit 1-029A is also separated from 1-029B by a corridor 1 1/2 to 3 miles wide from Hoodoo Pass to Wade Lake. See Roadless Area Map on page C-404 of Appendix C to the Forest Plan.

Because these units are isolated from each other and from other roadless areas by developments, they will be treated as separate and distinct units for purposes of this analysis and the assessment of direct, indirect, and cumulative effects.

Past Management:

At the time of the 1977 RARE II inventory, area 1-029 contained 98,860 acres. Between 1977 and completion of the Forest Plan in 1986, timber sale and road construction removed 2810 acres from the roadless area to the north and west of Hoodoo Pass. An additional 952 acres were removed due to general acreage recalculations. The net result of these changes was the separation of the initial area into the A and B units being discussed in this document and the reduction in size to 95,098 acres. See Appendix C, page C-407.

Past management of these roadless areas emphasized grazing, wildlife, and recreation values. Many facilities were constructed to support these uses. On grazing allotments, many miles of fencing and numerous water developments are in place to help manage the livestock. In the late 1960's and early 70's, approximately 15,500 acres of sagebrush were sprayed to enhance grass and forb production to benefit livestock and big game. An additional 5,400 acres of sagebrush were burned. Approximately 200 acres of aspen were treated to rejuvenate the stands and enhance wildlife habitat. There are also two cabins used by stockmen. A network of trails was developed to provide recreation and administrative access. There are also many miles of old "wheel track" roads crossing the area. In 1952, the Cliff Lake Research Natural Area was designated.

Off-road vehicle travel has been strictly managed in 1-029. Except for specific areas where snowmobiles are permitted to travel cross country, the majority of the area is closed to motor vehicles

except on designated roads or trails. See 1990 Interagency Visitor Map.

Since the execution of the Forest Plan in 1986, several "wilderness bills" have been proposed by the Montana congressional delegation. To date, none of these bills have proposed that the Freezeout Mountain area be added to the Wilderness system.

Existing Condition:

The existing condition of the area will be discussed thru 7 elements that comprise the roadless characteristics and wilderness features. These elements are; natural integrity, apparent naturalness, remoteness, solitude, special features, manageability, and special places and values. Detailed definitions of these elements are found in the Glossary.

The information summarized and presented in the following descriptions of the existing condition was gathered from Appendix C, and from correspondence and discussions with interested participants. Specific documentation of correspondence, conversations, and reviews are found in the project file.

Natural Integrity

Natural integrity is a measure of the extent to which natural processes are intact and operating. Management activities can impact the natural integrity of the area by altering such things as vegetation succession and watershed or fisheries conditions.

Much of 1-029A and nearly all of 1-029B are being managed under intensive rest rotation grazing systems. There are four sheep and eight cattle allotments grazed by approximately 3000 sheep and 8000 cattle. The natural vegetative succession has been interrupted and the natural integrity has been heavily impacted by the history of grazing, fire suppression, and treatment of the vegetation by spraying and burning. The fences, water developments, driveways, cabins etc have also introduced man made elements that detract from the natural integrity.

Apparent Naturalness

Apparent naturalness is a feeling of whether the area "looks" natural to most people who use it. The overall appearance of areas A and B is quite natural. The ranges are in good condition and the presence of livestock in an area is not an unexpected sight. The presence of fences, water developments, trails, stockmen's cabins, and wheel track roads are not viewed as significant intrusions by most viewers to the area. Again, they are expected elements of the setting.

Remoteness

Remoteness is a feeling of being secluded and out of the way. Access into both areas A and B is relatively easy. There are many trails accessing the interior and several are open for use by motorized vehicles. In area 1-029B, the existence of many wheel track roads further increases the ease of access. The more gently rolling nature of much of the terrain and the large areas of open sagebrush and grassland communities also detract from the feelings of seclusion. In general, the area offers minimal opportunities for experiencing a truly remote setting.

Solitude

The feeling of solitude is a very personal value related to isolation from the sights, sounds, presence of others, and developments of man. Solitude differs from remoteness in that it incorporates more of the human contact and personal challenge aspects into the setting.

The best opportunities for solitude are generally found in primitive and semi-primitive non-motorized classes of the Recreation Opportunity Spectrum (ROS). It is in these classes that an individual may find the best opportunity for personal challenges and the exercise of woodsman skills while out of contact with other people.

Recreation use has been heavy with approximately 4700 visitor days of use reported during the analysis of roadless areas in the Forest Plan. See Appendix C, page C-407.

With easy access, generally open terrain, and relatively high use statistics, the opportunities for finding areas that offer individual challenges in a setting where one feels isolated from other human contact are poor. In addition, an individual would seldom be far removed from the trails, roads, and livestock developments.

Special Features

Unit 1-029A contains Elk River which is currently under study as a potential addition to the National Wild and Scenic River System. The initial eligibility of Elk River was based on a survey of its wild characteristics. The status of the river is pending completion of the study and submission of a final recommendation.

Unit 1-029B contains the Cliff Lake Research Natural Area (RNA). The RNA was established in 1951 to preserve 2,301 acres of mountain grassland/timber type. The habitat types of the area specifically represented are; Douglas-fir/snowberry, Douglas-fir/Carex, subalpine fir/huckleberry, spruce/twinflower, and Idaho fescue/wheatgrass. The establishment document prohibits all types of use and occupancy detrimental to the primary purpose. No livestock grazing or timber harvest is permitted. Incidental recreation use, as well as regular protective and administrative uses are permitted.

Manageability

Manageability relates to the ability of the Forest Service to manage the roadless area to meet size criteria and the elements discussed above.

Area 1-029A, or a major portion thereof, could be managed as wilderness. The boundaries follow identifiable features for the most part and are devoid of narrow corridors or peninsulas. Impacts from motorized use of the trails could be eliminated through closures. Livestock grazing would continue and range improvements would remain a part of the setting. The Elk River road is an intrusion that would be more difficult to mitigate. Recovery of the roadbed to a natural condition or appearance would be a lengthy process. Removal of the road from the roadless area would result in either a long narrow corridor intruding into the area or a

larger acreage if the boundaries were adjusted far enough back to mitigate the impact of the road on other features and characteristics. The boundary could also be adjusted to remove the 160 acres of private land shown as Shakelford Cow Camp. This again would result in either a corridor or a larger area being removed. Under any circumstances, the minimum of 5000 acres would remain in 1-029A

Area 1-029B would be very difficult to manage as wilderness. While the exterior boundary is manageable, the island of development around Antelope Basin and Conklin Lake, as well as the inclusion of private land and road access corridor would be impacts very difficult to mitigate. The impacts of many "wheel track" roads would also offer very difficult mitigation. It is not likely that the impacts of these developments could be mitigated and new boundaries established that would retain the minimum of 5000 acres necessary for wilderness designation.

Special Places and Values

Special places and values are the specific sites, places, and activities that individuals have certain "feelings" for when they visit the area. Examples might be a certain trail, a high lake, a particular camping or fishing spot etc.

There were no specific special places or values identified during the scoping and roadless analysis completed as part of the Forest Plan. Values of the roadless area were expressed on more general terms ranging from "no special qualities" to wilderness support to protect watershed, wildlife, and recreation values.

Livestock Management:

Affected Area:

The proposed action and alternatives would occur on 10 of the 19 allotments within the Antelope Basin and Westfork of the Madison Analysis Areas. Allotments on which sagebrush burning would occur are: Bufiox, West Fork, Antelope Basin, Conklin, North Saddle, Hidden Lake, Elk Lake, Elk Mountain, Red Rock, and Horn Mountain. See vicinity and allotment maps.

Past Management:

Sagebrush spraying with herbicide occurred on most of the proposed units in the late 60's and early 70's. The spray killed approximately 90% of the sagebrush resulting in a flush of grasses with forb recovery occurring a few years later. Livestock numbers were not increased following the spray projects. Rest rotation and deferred grazing systems were implemented to improve livestock management, achieve better distribution, and allow utilization of the increased forage while maintaining the vigor of the regrowth and overall site productivity.

Existing Condition:

All of the affected allotments are under intensive management systems and have approved Allotment Management Plans. The following table displays the affected allotments, management system, year of implementation, and permitted AUM's on the allotment.

Table III-4. Affected Allotment Summary.

Allotment	Management System	Year Implemented	Permitted AUM's
Bufiox West Fork Antelope Basin Conklin North Saddle Hidden Lake Elk Lake Elk Mountain Red Rock	Rest-Rotation (4 Pasture) Rest-Rotation (7 Pasture) Rest-Rotation (4 Pasture) Rest-Rotation (4 Pasture) Rest-Rotation (5 Pasture) Rest-Rotation (5 Pasture) Rest-Rotation (5 Pasture) Deferred-Rotation (4 Pasture) Deferred-Rotation (3 Pasture)	1981 1967 1968 1970 1970 1974 1971 1981 1970	1898 8565 1518 1758 809 2867 1262 560 740
Horn Mtn	Deferred Entry (1 Pasture)	Total AUM's	20,131

All of these management systems have been successfully implemented as reflected in the overall good to excellent range conditions on the allotments. See allotment records on file at the Madison Ranger District. With the re-establishment of sagebrush in the sprayed areas, conditions are changing. As canopies begin to close, forage production is decreasing. Past research and experience has shown that measurable decreases begin to occur when canopy closure is 11% or greater. Canopy coverage on the areas proposed for burning generally range from 11-30%.

Soils and Geology:

West Fork Area

Stands of sagebrush proposed to be burned in the West Fork Madison (WF) area are contained in a belt across most of the river's basin in the southeast portion of the Gravelly Range. This belt runs from approximately the Forest boundary west of Patch Top Mountain, north to Anderson Creek, then traverses in a strip approximately 2 miles wide, and widening to more than 4 miles between Meridian Creek and Flatiron Mountain. The eastern boundary is near Jackpine Gulch.

Geologically, this band is comprised of Cretaceous and Tertiary, Permian, Missippian, Devonian, and Cambrian sediments in approximately the west half of the belt; generally getting older moving from west to east. The east half is comprised of

Pre-Belt crystalline rocks in the north and Tertiary volcanics in the south end of this half.

Variation in rock types, along with the geomorphic history of the area, and the changes brought about by weathering, has produced a range of land types and soils. The land forms in the WF area primarily belong to a relatively few geomorphic process groups:

- 1) Structurally controlled. There are relatively few structurally controlled land types such as dipslopes and structurally controlled breaklands in the area. About half of these delineations are moderately high forage production lands, with shallow to moderately deep (25-100cm), dark colored, well-drained loam, clay loam, and silty clay loam soils.
- 2) Mass-wasted land types, both shallow, soil mantle failures (several to many feet thick), and a few deeper, geologic failures (10's of feet thick). Most of the latter are undulating to hilly, rocky landslides. They have very shallow (less than 25 cm deep) to moderately deep, well-drained flaggy loamy fine sands to very fine sandy loams with channery and flaggy clay loam subsoils. Most of these are now stable since their kinetic energy has been released, and they no longer have a well-defined failure plane. Most of the former have deep (100-150+cm), moderately well to somewhat poorly drained silty clay loams, silty clays, and clays. Most of these are still subject to movement

and mass-failure. Almost all delineations have productive grasslands; some have open stands of Douglas fir, limber pine, or whitebark pine with grass understory.

- 3) Colluvial-alluvial slopes. These land types have surficial material overlying the residual rock or soil. This material is transported and deposited by gravity and by local, unconcentrated runoff on and at the base of moderately steep or steep slopes. Most of these have grassland vegetation, and many are high forage producers. For example, land type 62B is a lower concave slope ranging from 5-20% slope, with deep, well-drained, dark colored clay loams and silty clay loams. Biomass production ranges up to 1400 lbs/ac. Land type 61B, on the other hand, is characteristically straight, 15-25% slopes, with shallow to moderately deep, well-drained, dark, channery clay loams. Biomass production ranges up to 1000 lbs/ac. Land type maps are on file at the Forest Supervisors Office.
- 4) Pluvial land types are those that are developed in comparatively erodible solum. They are shaped by the action of rainfall. They are characterized by a high degree of dissection, with steep side slopes, and relatively narrow ridges. Slopes range from 25-50%, with shallow to moderately deep, dark colored, channery loams and very fine sandy loams. Most of these delineations are grasslands. Their production potential varies widely by soil type (rock content, surface area, texture, mineralogy), aspect elevation. Some delineations produce only about 400 lbs/ac., others nearly 1,000.

The last major geomorphic group in the West Fork area is the frost-chruned processes. This includes the stirring, churning, modification, and other disturbances of regolity earth materials resulting from frost action. It involves frost-heaving, solifluction, differential, and mass movement, and produces patterned ground under frequent and intense freeze-thaw cycles.

In this area of relatively low elevation, land types are weakly and moderately frost-churned. For example, land type 46X range in elevation from 6500 to 8500 feet; slopes range from 10-35%; can occur on all aspects, but southerly is more common; cover types are a pattern of about 50/50

mountain grassland and stands of Douglas fir, lodgepole pine-Douglas fir, or lodgepole pine-subalpine fir. Soils are moderately deep, dark colored, well-drained loams and sandy loams; under forest canopy, soils have clay loam subsoils, and are not as dark as in the grassland soils.

6) A minor geomorphic group in the area, glacial processes, is represented by a few areas of glaciated slopes, limited moraine, and glacial troughwalls. There may have been more area affected by mountain glaciers, but the soft sedimentary base rocks do not exhibit glacial features as well as harder, crystalline rock such as granites. Also, weathering of these materials, along with post-glacial slumping, may have obliterated some glacial features.

The most extensive glacial unit of the area, relative to rangelands, and the units most likely to contain treatable stands of sagebrush, are the 21D land types. These delineations are moderately steep (20-40%), are weakly scoured with thin deposition; are weakly dissected, with moderately thick regolith. Soils are shallow to moderately deep, well-drained sandy loams, loams and clay loams in a complex pattern.

Antelope Basin Area

The Antelope Basin area, largely in the southeastern most corner of the Gravellies, is somewhat simpler both geologically and geomorphically. Most of the proposed area has prebelt crystalline rock, with a small area of Tertiary volcanics in the Narrows Creek area.

Structural land forms are far less represented within the antelope basin proposed sagebrush boundary, than in the West Fork proposed area. Land type 98C & D are the only units that occur with any frequency. With timber cover on 98C's and slopes up to 70% on 98D's, little if any sagebrush would likely be burned on these units.

Mass wasting land types are also far less frequent in the Antelope Basin proposed area. Soils that weather in the pre-Belt Group rocks do not contain the secondary soil minerals that are susceptible to mass-failure/shear plane development. Most of the area within the proposed boundary is comprised of colluvial-alluvial and frost-churned land types as described under the West Fork area. Types that are more common in the Antelope Basin boundary are alluvial fans and stream terraces. A typical alluvial fan land type in this area would be 64B. This mapping unit is mostly gently sloping (5-15%), weakly dissected, and broad, with thick regolith. They are predominantly grassland, with shallow, well-drained, gravelly loams and sandy loams. Productivity usually does not equal the more productive colluvial-alluvial slopes, or some of the weakly frost-churned types.

A typical stream terrace from the area can be represented by land type 66B. The unit is nearly level (0-5%), and has thick regolith. There is mostly grassland cover; soils are shallow, well-drained, gravelly sandy loams and loams. They are slightly more productive than the fans.

Air Quality:

Affected Area:

The entire project is located within Airshed 7 as defined by the Montana State Airshed Group and

the 1977 Clean Air Act. The boundaries of Airshed 7 include Beaverhead, Madison, and the southern third of Jefferson Counties. The project area itself is a Class II Airshed but is adjacent to a Class I Airshed (Red Rock Lakes National Wildlife Refuge).

Past Management:

There have been no violations of air quality standards in the project area. Past wildfires and prescribed burns have occasionally caused local air quality deterioration.

Existing Condition:

There are no industrial or agricultural sources of air pollution that affect the project area. The ambient air quality is rated good to excellent. Wind power in the project area is given a rating of 6, the highest in the state. This rating projects wind speeds to average approximately 16 mph, assuring adequate mixing and dispersion of potential pollutants (Elliot et. al., U.S. Department of Energy.)



CHAPTER IV

Environmental Consequences



CHAPTER IV -- ENVIRONMENTAL CONSEQUENCES

Changes Between Draft and Final:

Vegetation:

Effects Common to all Action Alternatives:

In response to public comments expressing concerns about the sprouting of undesireable

brush species after the burns, additional analysis was completed and incorporated in the vegetation section.

Introduction:

This chapter provides an issue by issue disclosure of the environmental effects of implementing the alternatives. The significant issues and indices of measure are the primary focus of the discussions. Effects which may not be linked to the significant issues are also presented when they lend substance to the discussions and assist the decision maker in arriving at a decision.

All action alternatives are varying schedules of burning, therefore, the effects are very similar in kind but vary in degree. Discussions in this chapter focus on the most significant effects while other effects are described briefly. The descriptions of existing conditions presented in Chapter III provide the baseline for discussion of effects. Direct, indirect, and cumulative effects will be discussed. Cumulative effects will discuss the effects of individual alternatives in combination with the effects of past, present, and reasonably forseeable actions.

Environmental Consequences:

Wildlife:

Effects Common to all Action Alternatives:

All of the effects summarized in this Effects Common section are discussed in more specific detail in the wildlife analysis enclosed in the project file.

Big Game:

Moose populations will not be adversely or positively affected to any measureable degree. They will continue to use the burned areas. The regeneration of aspen and the browse it provides will be a positive benefit.

Non-game and Small-game species:

Both ruffed and blue grouse will benefit from the burning. Ruffed grouse will respond positively to the diverse age classes that will be established in the aspen stands. They generally need a diversity of ages classes in close proximity to satisfy all habitat needs. Blue grouse will find the burned areas near timber stands as good feeding areas due to the increases in forbs that will result.

Burning of sagebrush will have no detrimental effect on either the ruffed or blue grouse. Ruffed grouse could be adversely affected if the treated aspen stands fail to regenerate.

Management Indicator Species:

Elk:

None of the area covered in this analysis is key winter range therefore, none of the alternatives will adversely impact wintering elk.

The potential cumulative impacts on elk were analyzed for the Gravelly Elk Management Unit. Factors considered were the effects of the individual alternatives, the other ongoing management activities in the area, and the potential of approximately 200-250 acres of additional sagebrush burning per year for the next five years on nearby private lands. None of the alternatives in combination with other ongoing management activities or the potential of an additional 200-250 acres of sagebrush burning per year on nearby private lands will likely alter populations or the health of the elk herds into the forseeable future.

Pine Marten:

None of the action alternatives will impact pine marten habitats.

Sage Grouse:

Cumulative impacts of prescribed burns on adjacent sagebrush stands in and near the Gravellies have the potential of reducing sage grouse populations as a whole. The most critical areas, namely the breeding areas and the winter range, are located outside Forest Service control. Activities in these critical areas could further reduce numbers of grouse that are sometimes found within the analysis area. Grouse are not likely to move from another area to the analysis area if some habitat alteration takes place. Grouse are very traditional in their use and will either survive or die out in their traditional summer and winter

ranges. Therefore, the impacts of the alternatives, such as they are, effect the local population only, with little cumulative impact beyond the Gravellies.

Goshawk:

None of the action alternatives will impact old growth Douglas fir stands. While goshawks are predominantly forest birds, they will occassionally hunt the edges of open meadows to take advantage of prey species such as ground squirrels (Shuster 1977). Goshawks will also nest in mature aspen and use the older trees for hunting perches. If the aspen stands that are burned are not allowed to progress back to older ages, the nesting and perching habitat they provide would gradually be eliminated. This impact will be mitigated by buffering the regenerated stands against future burning until the trees have advanced into older age classes.

Trumpeter Swan:

This species is not likely to be effected by the burning except for the year that the Elk Lake Unit #5, Conklin Pothole Unit #4 and theConklin Sheepfield Unit #3 are burned. These units are directly west of the Conklin and Elk lake swan nests and approach to within 300 yards of the nests. Burning from late March through May would be during the time the swans are establishing their nest or are on eggs. This would be their most critical time period where they are most likely to abandon the nest. A disturbance such as a fire, while short in duration (probably one but possibly two days) could be enough to cause abandonment of the nest. Consultation with biologists at Red Rock Refuge concurs with this opinion that these burns could jeopardize these nests (Gilbertson 1990 personnel commun.).

Scheduling these units for a fall burn will mitigate the potential impact on the nesting swans. None of the other units, whether burned in the spring or fall, will have any impact on the swans.

Sensitive Species:

Boreal owl, harlequin duck, spotted bat, and Western big-eared bat:

It is expected that none of the action alternatives will have any impacts on these species.

Ferruginous hawk:

Ferruginous hawks are very susceptible to abandonment if disturbed even minutely during egg laying and incubation (Olendorff 1973). Snow (1974) states "With the increasing demand on public lands for resource development and recreation, human activity in areas with nesting populations of ferruginous hawks may become a severe limiting factor if such activity occurs during the period before the young hawks are hatched. This will mean a loss of habitat for ferruginous hawks even if the actual land is itself left intact and not altered during development."

A prescribe burn within sight of the nest could easily cause desertion. Howard and Powers (1973) and Smith and Murphy (1973) all verify this tendency to abandon nests even from one visit by researchers from a distance.

Snow (1974) recommended limiting or prohibiting human access to within 300 yards of the nests during the incubation period which runs from mid March through mid May.

Ferruginous hawk could be impacted by the alternatives through disturbance during nesting. The units at the upper end of the West Fork Madison River west of Cascade Creek would be the most likely to contain nests although no nest sites have been recorded. These units are listed as a spring or fall burn. If a fall burn, the impacts would be limited to the burning of nest trees, something that could be easily mitigated once the nests are located. If the units are not burned in the spring and assuming the nest trees can be saved from burning, it will still be important to assure the 40-60% mosaic in the individual burn units is not exceeded. Excessive burning will reduce habitat for cottontails and jackrabbits which in turn reduces suitability of the areas for ferruginous hawks.

With the burning planned and ongoing in the Centennials, the cumulative impacts on ferruginous hawks could become significant. Unmitigated burning could result in abandonment of a considerable percentage of the hawks' nests which could

ultimately threaten the area's population. The important habitat need is for large sagebrush stands undisturbed during the spring with healthy rabbit populations. Some of the burns on private land may be done without consideration of the needs of this bird. This could make the south Gravellies habitat increasingly more important. Mitigation measures as described become even more important.

Threatened and Endangered Species:

The discussions presented here and in following sections of this chapter are substantiated in more detail in the Biological Evaluation attached as Appendix B of this document.

Grizzly bear, peregrine falcon, and grey wolf:

These three species are not likely to be affected by any of the action alternatives. Use of the vicinity, particularly the sagebrush areas is slight. There are also no significant reductions of the prey base predicted which could impact them indirectly.

Bald eagle:

There is an active bald eagle nest site located on the east side of Elk Lake approximately 1/2 mile from the burn units west of the lake. Smoke from a spring burn of Elk Lake Unit #5 would likely drift towards the nest and could result in abandonment by the eagles.

There are several ways in which to mitigate this affect. The easiest would be to move the burn to the fall or at least late enough in the spring so as to be after egg hatching. In 1990, the estimated egg hatching date was between May 7-14. This was the first year this nest was successful in recent years. If the nest is abandoned, then the burn could go on as scheduled with no impact to the eagles.

Other than this one unit, the alternatives will have no impact on the bald eagle. The nesting eagles made most of their prey captures in the lake or associated riparian. When they did hunt over land, it was to the east, in the 1986 burn unit where approximately 80% of the sage was killed. For this reason, the burn units proposed, excepting the above unit, would not be an impact.

Direct and Indirect Effects by Alternative:

Alternative 1 - No Action:

If no prescribe burns take place, a number of consequences can be predicted to occur in the next several decades.

As sagebrush stands reach maturity, vegetative characteristics will shift towards a higher canopy density and a corresponding decrease in grasses and forbs. There has been speculation that past maturity, these stands will then start to open up as the older sage dies, thus allowing grasses to increase and young sage to grow in these openings. Under this theory, vertical diversity would then become quite high, with several ages of sagebrush and grasses growing closely together. Extrapolating further, this condition could continue indefinitely. Only speculation is involved since there is no documentation showing when this breaking up of the mature stand would occur or if it in fact would happen. For the purposes of this document however, the following are the wildlife responses to this shift from present condition to maturity and finally to this uneven age sage condition.

Big Game:

Big game species will not likely increase or decrease in population because of habitat changes in the summer range. Their population is much more sensitive to hunting seasons and winter range conditions. There may be some local movement of animals with the change in vegetation however. For example, bedded or stationary mule deer will be less vulnerable to hunting or disturbance with the increase in sage. There would be less hiding cover to flee to however, as the aspen stands are lost. A running mule deer would therefore be more vulnerable. Mule deer may be more likely to avoid the more open grass or open sagebrush stands during hunting season because of their vulnerability.

Moose will take advantage of the aspen which are coming up from the cutting which took place in

1989, but seeing as there would be few other aspen stands regenerating overall, the moose would frequent this area a little less.

As the sagebrush plants mature and grow larger and denser, the habitat for antelope will decrease. Unless the older sage plants start to die off, as predicted by some interests, to be replaced by smaller younger plants, the sage will thicken in canopy coverage, restricting the movement of antelope (Hoover et all. 1959). In Montana, average shrub canopy cover of antelope habitat was 10% to 24% (Bayless 1969).

Using the U.S. Fish and Wildlife Habitat Suitability Index model, currently, the habitat is rated at .65 (out a possible 1.0), with a projection of the habitat falling to .46 within 20 years before increasing back to .52 by 30 years. This increase after 20 years is due to the theory that the older sage plants will begin to die and be replaced by young plants regenerating naturally.

Studies in Wyoming and Colorado have shown that stands of sage taller than 30 inches covering more than 30% of an area tend to block an antelope's vision and cramp its sprinting style. Sage in the south Gravellies may approach 30 inches in height, but that would probably be maximum height for most plants. At this height the antelope may avoid the stands unless they begin a natural turnover and the older plants die off. Also, as the sage stands grow more dense, the availability and amount of forbs decreases, a food which antelope key on during the summer (Hoover et all. 1959).

These factors are figured into the U.S. Fish and Wildlife Antelope model mentioned above. Also included are reproductive requirements where optimal fawn habitat has standing vegetation averaging 22.8 to 45.7 cm (9-18 in.) (Einarsen 1948). Low ground cover enabled the does to observe the location of their young and provide excellent camoflage for the young.

Non-game and Small-game Species:

If prescribed fire is not used, and until a wildfire occurs, wildlife species dependent on aspen will be decreasing in numbers in the project areas.

As described in existing condition, aspen stands have been and are dying out in the West Fork and Antelope Basin area. Based on a sample survey in the south Gravellies, approximately 1/2 of the aspen is in jeopardy of dying out.

It is reasonable to assume those species dependent on aspen will decrease in direct proportion to the loss of aspen. Species such as warbling vireo, sapsuckers, ruffed grouse, and other birds with near exclusive direct ties to aspen would be the first to leave the area. Other species who use the aspen as perch sites or are secondary cavity nesters would be the next to leave as the dead aspen fall and no longer become available. The last of the species to leave would be those dependent on the dead and down aspen. Aspen logs decay quickly and once gone, would have no replacements. Bluebirds, a bird of particular interest to visitors, would decrease in numbers due to the decrease in available nest cavities as the aspen stands die out.

In a savannah or grassland habitat type, the presence of trees, though few in number are of great importance, far out of proportion to their acreage. The loss of these trees from the ecosystem would be a serious loss to the diversity of the area.

As sagebrush increases in canopy cover, some species will decline in numbers. Species which would be decreasing include the longspurs, western meadowlark, horned lark, and mourning dove (Ryder 1972). Species which would be increasing would include Vesper sparrow, Brewer's sparrow, green-tailed towhee, and sage thrasher. Other species will decrease due to the increase in vertical architecture of the growing sage (Hatley and MacMahon, 1980).

Management Indicator Species:

Elk:

Elk response to no action will be minimal. Elk will continue to use the area for calving and as a nursery area even though forage for them will decrease. If there were a burn in adjacent localities, they would be drawn away from this area, but barring that, the elk will probably continue to use

West Fork and Antelope Basin at the levels presently used.

There would be no impacts to elk calving areas in this alternative.

Pine Marten:

There is no change from present condition for this species.

Sage Grouse:

As described in the existing condition for sage grouse, the condition of the sagebrush is probably not the limiting factor in the population level of sage grouse. There is a possibility of the area becoming too heavy in sage (greater than 30-40% canopy cover). Sage grouse will avoid the area, but the current grouse population is so small that they could easily find enough stands with less canopy cover and there should not be a problem. The most likely impact on the sage grouse habitat would be a decrease in forbs available and a decrease in the condition of the riparian. This decrease in forbs would be the result of the increasing canopy coverage in the older sage stands. Decreases in the condition of riparian areas would result from the concentration of livestock and big game in the areas as forage quantity and quality in the uplands decreases.

Goshawk:

This bird is not likely to be impacted by the change in vegetation from this alternative except for the loss of aspen stands which would somewhat reduce nesting potential and the reduction in the diversity of prey available for this bird. It is expected that such changes would be very slight and that the overall reproductive capabilities of the hawk would not be adversely affected. Populations would be maintained to at least the existing levels.

Trumpeter Swan:

The trumpeter swans at Conklin Lake and those that fly over this area would not be impacted by the no action alternative.

Sensitive Species:

Boreal owl and harlequin duck would not be impacted by this alternative.

Ferruginous hawks use the sagebrush of the West Fork and Antelope Basin. The loss of aspens will reduce the number of available trees for nesting and perching, though ferruginous hawks are able to successfully nest on the ground. Compound that ability with the need for only one nest tree per several square miles and it is not likely that this alternative will have any significant impact on the species.

Impacts on western big-eared and spotted bats are not known though it is doubtful that this alternative would have any effects on these mammals.

Threatened and Endangered Species:

The four species listed: peregrine falcon, grey wolf, grizzly bear, and bald eagle, would not be impacted by the no action alternative. There will be a slight change in prey available for these species and a reduction in forbs available for the grizzly bear though this should not in any way impact the grizzly bear.

Alternative 2 - 10 Year Burning Cycle:

This alternative would shift 36% of the sage into grassland with very small sagebrush stands coming up while the remaining would be 20+ years in age. Canopy cover would be 15-30 %. This alternative strongly favors those animals preferring grasslands (early successional stages of sage) or those that key into fresh burn areas.

Big Game:

Mule deer will be attracted to the burn areas in the spring, and the does should benefit. During the fall, the reduction in hiding cover from the burns is much more important than the benefits from the spring greenup. By the end of 10 years, approximately 15,120 out of the 42,168 acres of sage would be 10 years or less. No matter which way you look at it, there would be much less mature sage for deer to be able to bed down and

hide in. This increase in vulnerability could very well impact population numbers or resulting age class of the deer with the current State hunting regulations.

Antelope will benefit in the springtime for the first several years following burning by feeding on the highly nutritional forbs. The greenup in the burns, occurring several weeks prior to greenup elsewhere puts the antelope in much better condition going into the does' lactating season. Presumably, this would mean the fawns could be in better condition. as a result of the does' improved diet. The does will avoid birthing in the most recent burns, preferring areas with a little more cover, be it grass or shrub. This alternative will provide for less acceptable fawning areas than the other two action alternatives. The burned areas would become excellent fawning areas after the first growing season, but in the first year, the fawns would be too exposed for the area to be used for fawning. Whether fawning habitat is limiting in this area is very debatable however.

The Habitat Suitability Index for antelope would improve from its present .65 to .82 by the end of 30 years implementation of the burning cycle.

The condition of winter ranges found elsewhere (there is no winter range in the project area), and the type of hunting season as set by the state will have far greater impacts on big game populations than the condition of the summer ranges affected by this proposal.

Non-game and Small-game Species:

The longspurs, meadowlark, horned lark, and morning dove and other species that prefer open habitat and grasses and forbs would benefit from this alternative. In his thesis on the effects of sagebrush burning on an ecosystem in northwest Wyoming, J. McGee found bird diversity after spring burns to return to preburn levels by 3 years. Fall burns were slower to recover. Nonbreeding densities actually increased after burning, utilizing burned areas for feeding and surrounding vegetation for resting and cover. Conversely, the response by nonbreeders was greater and lasted longer for fall burns compared to spring burns. Apparently,

the nonbreeding birds responded positively to burns- the more complete the better, while breeding birds were detrimentally effected proportional to the intensity of the burn. (Fall burns often burn hotter and more completely than spring burns).

Sagebrush dependent species such as greentailed towhee and Brewer's sparrow would probably decrease in numbers along with other animals which need the structural composition of sage or other brush. Also included would be those species that need litter such as least chipmunk (Parmenter and MacMahon 1983). The magnitude of these decreases would be proportional to the amount of sage removed from the site and the size and intensity of the burn.

In summary, the diversity of wildlife after the burns would depend on the extent of the burn area, the mosaic pattern left, and the intensity of the burn. With this alternative, using a higher than "natural" fire frequency in the burn units, total diversity will be reduced even though some species or certain populations within these species (nonbreeders) may actually increase.

Management Indicator Species:

Elk:

Elk will positively respond to the burns for the first several years, feeding on both grasses and forbs during the spring. Since the sage in the Gravellies seldom reaches over 3 feet in height, elk generally do not use sagebrush for hiding cover. Elk will use sagebrush for security during calving. If there is any potential detrimental impact on elk, it would be during calving season. Approximately 2,613 acres of burn units lie within elk calving areas.

State biologists believe cow elk prefer sagebrush to calve in, though personnel observation and the radio locations indicate elk calve in a variety of habitats in the Gravellies. No research has been completed that confirms or refutes the elks' need to calve in sagebrush. Elk calf locations mapped for the Gravelly elk study do show the elk's preference for calving in the spring greenup zone in early June. This zone is predominately sagebrush.

As stated earlier, elk continued to increase in numbers during and after the spraying which killed large areas of the sage in the early 1970's. Apparently the elk are capable of calving successfully without the presence of large expanses of sagebrush. It should be noted however that they still may prefer to calve in sage.

Predation on elk calves has not been a significant factor in the Gravellies (Lonner personnel communication). If predation has not been a problem in the past even with the past spraying and burning, then it is unlikely that predation would suddenly become a problem because of the level of burning under this alternative.

Sage Grouse:

This alternative has the potential of decreasing the available acres of suitable habitat for sage grouse. Critical brood rearing habitat could be lost unless a buffer around wet meadows is retained. Sage grouse, preferring forbs and insects during the summer months also need adjacent cover (Peterson 1970, Wallestad et al. 1975). If these wet meadows, which are preferred feeding sites, have the adjacent sage burned, then they will be little used. Because of the larger number of acres burned under this alternative, the likelihood of this happening is greater. Retention of a buffer of 50 yards around the wet meadows would negate this adverse effect.

Klebenow (1972) suggested that fire could be an ideal tool to achieve a diverse habitat providing for all the needs of sage grouse. Gates (1983) suggested that fire could be used to enhance early brood rearing habitat.

Klebenow (1972) also cautioned that burning should not be conducted on sage grouse winter range but that "moderate burning coupled with grazing management," could improve nesting habitat. As stated earlier, this area is not winter range for sage grouse.

Not all researchers agree that fire can be beneficial for sage grouse. Braun (1987) stated 'fire cannot be reported as a beneficial habitat modification practice for sage grouse without further research."

This alternative may impact leks if the burns encompass or borders the breeding areas. No leks have been located, nor are there any known historical leks in the area being analyzed. If any leks are located, a buffer surrounding the area would be a critical mitigation measure for this alternative. Wallestad and Schladweiler (1974) indicated a need for 1.5 mile buffer around leks.

The greatest impact of this alternative is the continuation of very young sage in the units with no time given for these stands to reach maturity. At 10 years, the young sage in the treated acres are only a few inches high, hardly tall enough to be considered a sagebrush stand, and certainly only minimally usable for a sage grouse for cover or nesting. The unburned areas within the mosaic would still be available for nesting and cover.

Alternative 3 - 20 year Burning Cycle:

This alternative, burning 1512 acres per year (756 acres actually blackened) on the average has less impacts, beneficial and otherwise, than alternative 2. Approximately 7,560 acres would be kept in a grassland or near grassland type condition.

Big Game:

Mule deer would be attracted to the burn areas as in Alternative 2, though they would be in fewer acres. There would be more acres of sage for deer to use as hiding cover than Alternative 2, though less than the no action alternative or Alternative 4. With 2/3 of the sage being old and capable of providing some cover to a deer lying down, the burning is not likely to have an adverse impact on mule deer in the fall. Vulnerability of the mule deer would be pretty much the same as the no action alternative.

Antelope would have less burn acres under this alternative than alternative two on which to feed during the spring. There would be more acres which would be moving towards a stage where it is undesirable antelope habitat. These acres would be approximately 40 years old by the end of the 20 year rotation, and would probably be at maximum height and density. The Habitat Suitability

Index for antelope would be .84 as compared to the current .65 rating.

Non-game and Small-game Species:

Conditions under this alternative in comparison to the other alternatives would favor species that use old sage. Green-tailed towhee and Brewer's sparrow could be at slightly higher numbers, given the increase in acres of old sage over current condition. These species would avoid the treated acres.

With the presence of grassland and young sage at this level, birds such as longspur, meadowlark, horned lark, and morning dove, would be close to existing numbers. The mosaic pattern could actually increase the habitat for those species preferring open grassland to feed, but needing some sort of canopy cover for nesting. With the remaining sage being older than the islands which would be present in Alternative 2, there would be greater vertical structure and a higher litter level present. These conditions would favor species such as sage thrasher and meadow voles.

Management Indicator Species:

Elk:

Elk will positively respond to the burns for the first several years, feeding on both grasses and forbs during the spring. There would be less acres available than Alternative 2, so benefits to elk in this regards would be less. If there is any adverse impact on elk, it would be during calving period.

Approximately 1,962 acres of burn units are located in elk calving areas. Any detrimental impacts would be less than Alternative 2 due to the reduced acres being treated per year. The remaining sage would have the opportunity to grow larger and denser, providing better calving habitat than Alternative 2.

Sage Grouse:

This alternative has the potential of improving sage grouse habitat or at least not significantly decreasing habitat provided the mitigation measures mentioned elsewhere are taken into consideration.

Alternative 4 - 30 year Burning Cycle:

This alternative burns the sagebrush closely to what is believed to be the natural burning frequency for this area. With approximately 1% of the sage actually burned in any one year, the impacts of this alternative are very local with minimal cumulative impacts associated to surrounding areas. Within the burn areas, this alternative comes closest to emulating the natural diversity and associated wildlife numbers and species likely to be found in the sagebrush habitat types.

Big Game:

Mule deer would key in on the new burns in the spring. Again, this would be less of a benefit than Alternative 2 and 3 due to reduced acres burned. Impacts on fawning habitat for deer would, like antelope, be minimal.

There would be more tall sage left standing than Alternative 2 or 3, though less than Alternative 1. Mule deer would therefore benefit in the fall with this alternative over the other 2 action alternatives.

Antelope would benefit to a lesser extent to the burning than from the levels found in Alternative 2 and 3 in the springtime during greenup. There would be more fawning cover than Alternative 2 and 3, though less than Alternative 1. This alternative should not alter the population in any way. The Habitat Suitability Index for antelope would be .78 as compared to the .65 that currently exists.

Non-game Species:

This alternative would have less grassland looking stands than present condition and therefore would have less habitat for those species preferring the open stands. Longspurs, meadowlarks, horned lark, and morning dove would decrease while sagebrush dependent species would increase, or have the potential to increase, to levels above present condition. Green-tailed towhee and Brewer's sparrow would increase above present

condition, though at levels lower than the no action alternative.

Management Indicator Species:

Elk:

Elk will positively respond to the burn in the spring being drawn to the early greenup in the recent burns. The reduced acres burned compared to the other action alternatives would tend to concentrate the herd of elk into the most recent burn areas, particularly in the West Fork where the majority of the elk are. With only 1008 acres treated per year over the entire area, and of that, only 1/2 actually burned, (in compliance with the mosaic pattern mitigation measure), the impacts on calving grounds will be minuscule at worst. Approximately 1,217 acres of burn units are located in elk calving areas.

Sage Grouse:

This alternative has the potential of improving sage grouse habitat, (though to a less amount than Alternative 3) or at least not significantly decreasing habitat provided the mitigation measures mentioned elsewhere are taken into consideration.

This alternative allows the unit a chance to reach at least 30 years of age before burning, and the leave sage even older. There would be a significant increase in old sage in the area over present condition. This would allow the sage to start

breaking up as theorized by some researchers. (As stated earlier, this theory remains untested.)

As stated earlier, some researchers question the benefit to sage grouse from fire. If this is true, then certainly the impact of burning of this alternative would be less than the other 2 alternatives. Cumulative effects would be the same as previous alternatives.

Consistency with Forest Plan Standards:

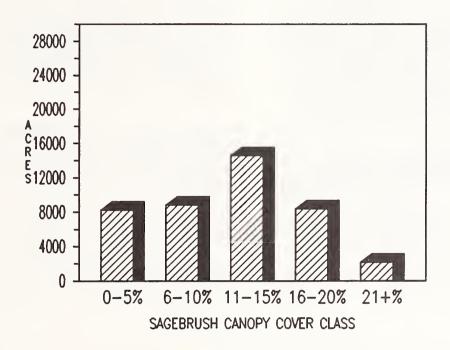
All action alternatives are consistent with Forest Plan standards for wildlife.

Landscape Diversity:

Introduction:

As noted in chapter III, the main element that affects the landscape diversity in the sagebrush/ grass vegetation type is the density or canopy cover of the sagebrush along with the horizontal structure or placement of the plants. The current condition of the 42,168 acres of sagebrush/grass vegetation is mainly due to past management activities. Figure IV-1 displays the current condition of the sagebrush canopy cover found in the West Fork/Antelope Basin area. This provides a general view of how the area breaks out and does not show how the different canopy covers are distributed throughout the study area. These figures are not static. The figures displayed in each alternative discussion are based on how the sagebrush/grass vegetation will look after thirty years.

Figure IV-1. Existing Sagebrush Diversity.



Effects Common to All Action Alternatives:

Cumulative Effects:

In review of other state and federal agencies along with private landowners adjacent to the study area we have found there is potential for additional prescribed burning in the sagebrush/grass vegetation type. For the next five years on private lands south of the West Fork/Antelope Basin area there is potential for an additional 200-250 acres per year of prescribed burns. The landowner burned approximately 600 acres in the fall of 1990 which may reduce the number of acres to be burned in the future. In the reasonably foreseeable future no other government agencies, state or federal, have any plans for prescribed burning in the sagebrush/ grass type. The effect of these activities would be the reduction in the density and structure of the shrub component on these sites. The initial change

would be toward a more open grassy appearance with scattered shrubs.

Another potential activity that has and will affect the landscape diversity of the area is timber harvesting. The recovery of past logging units and the cutting of new units will affect the diversity within the forested areas. This will modify the overall landscape diversity in the West Fork/ Antelope Basin area.

Direct and Indirect Effects by Alternative:

Alternative 1 - No Action:

Under this alternative prescribed fire will not be used in managing the sagebrush/grass, aspen and conifer encroachment in the study area. Plant communities will be allowed to progress successionally in the absence of fire. Over time there will

be a decrease in the landscape diversity. Sagebrush density will increase. Vertical and horizontal structural diversity will decline. Current grassy openings will close causing the loss of edge effect.

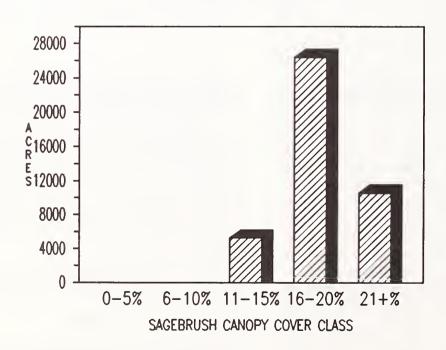
As discussed in the vegetation section of this chapter it has been theorized that given time dense stands of sagebrush will naturally break up and produce a mosaic of small openings and heavy shrub canopy(Wambolt, personnel communication). Even under this senario landscape diversity will decrease from current levels. The landscape will be dominated by large expanses of heavy shrub cover with small, unconnected openings scattered about.

Not only will the sagebrush/grass vegetation become more uniform there will be a loss of diversity

in the aspen and sagebrush - forest ecotone. Without some type of catastrophic event such as fire, there is the potential to lose up to 50% of the current number of aspen stands. These stands will generally convert to conifer forest or sagebrush/grass vegetation. Conifer encroachment along the sagebrush - forest ecotone will continue to increase. These sites, in the absence of fire, will convert to closed canopy conifer stands. Review the vegetation section of this chapter and Affected Environment chapter for more information on these changes.

An approximation of the sagebrush canopy cover that would result from Alternative 1 is displayed in Figure IV-2. The graph is based on what the area would look like in thirty years.

Figure IV-2. Diversity of Sagebrush after 30 Years - No Action.



Alternative 2 - 10 Year Burning Cycle:

This alternative would treat the sagebrush in a ten year cycle. Approximately 3024 acres would be treated each year. The alternative would favor a landscape mosaic in the sagebrush/grass type dominated by a more open grassy appearance with scattered patches of shrubs. The density of sagebrush will decrease along with the vertical and horizontal structure on the site. Heavier stands of sagebrush would be found in the unburned areas within a unit and those sagebrush/grass types that are not scheduled for treatment.

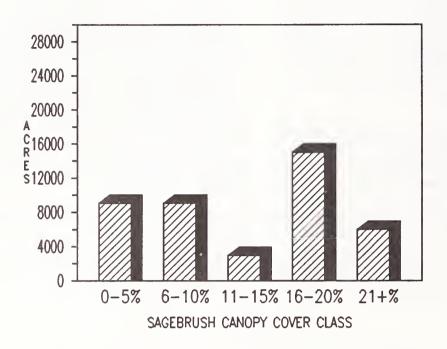
Aspen condition would improve under this alternative. Fire will stimulate aspen growth along with setting back conifer development within individual stands. Reaction of individual aspen stands to fire is dependent on fire intensity. Due to the burning prescriptions to maintain a mosaic of burned and unburned sagebrush most aspen stands will only be affected by fire along the edges of a stand. This type of fire will cause a thinning of the mature trees and encourage an all-aged stand condition

(Brown and Simmerman 1986). Some stands will burn at a higher intensity killing all mature trees and produce an even-aged stand. This alternative will improve the condition of aspen stands and maintain them as a part of the overall vegetative diversity in the West Fork/Antelope Basin area.

Those areas with conifer encroachment would be maintained in approximately the same appearance as they are found currently. These areas would continue to look like open park-like stands of Douglas Fir with a scattered sagebrush/grass understory. Prescriptions will be such that conifer seedlings are killed but most sapling trees protected. The treatment of these sites will prevent the conifers from completely filling in and changing the general appearance of the site to one of a dense conifer forest.

An approximation of the sagebrush canopy cover that would result from Alternative 2 is displayed in Figure IV-3. The graph is based on what the area would look like in thirty years.

Figure IV-3. Diversity of Sagebrush after 30 Years - Alternative 2.



Alternative 3 - 20 Year Burning Cycle:

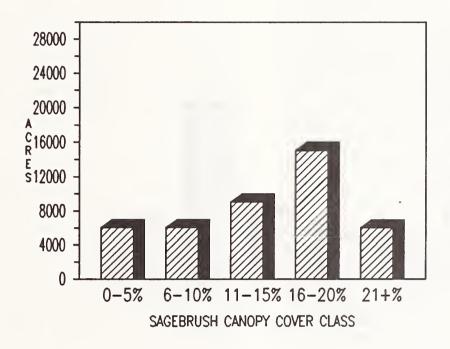
This alternative would treat the sagebrush in a twenty year cycle. Approximately 1512 acres would be treated each year. The alternative would produce a fairly even mix of different shrub densities. No one canopy cover class would dominate. The view of the sagebrush/grass type would be one of grass dominated openings intermixed with moderately dense to dense stands of sagebrush. The fire will produce a varied pattern of burned and unburned areas. The size and shape of the more open areas will be irregular, with an increase in edge effect in the community.

The vertical and horizontal structure within the sagebrush/grass vegetation will increase.

This alternative will have the similar affects on aspen stands and conifer encroachment sites as alternative 2.

An approximation of the sagebrush canopy cover that would result from Alternative 3 is displayed in Figure IV-4. The graph is based on what the area would look like in thirty years.

Figure IV-4. Diversity of Sagebrush after 30 Years - Alternative 3.



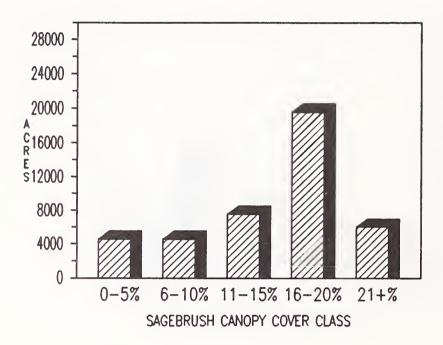
Alternative 4 - 30 Year Burning Cycle:

This alternative would treat the sagebrush in a thirty year cycle. Approximately 1008 acres would be treated each year. The alternative is similar to alternative 3. The visual effects on the burned sites will be the same but there will be a general dominance of the heavier shrub densities. A majority of the sagebrush/grass vegetation will be viewed as dense stands of sagebrush. The grass dominated openings will be fewer and widely scattered in the area. The overall structure within the sagebrush/grass type will decrease due to the dominance of the heavier canopy cover of sagebrush.

Generally this alternative would have the same affects on aspen stands and conifer encroachment sites as alternative 2. Due to the longer time frame to treat all sites, those aspen stands that must be deferred to the later years of the cycle may be lost. Conifer encroachment sites deferred to the later end of the cycle will have a higher density and canopy closure than current levels. By deferring units seedlings currently established may grow large enough to survive the fire treatment. This will alter the overall conifer density in the area.

An approximation of the sagebrush canopy cover that would result from Alternative 4 is displayed in Figure IV-5. The graph is based on what the area would look like in thirty years.

Figure IV-5. Diversity of Sagebrush after 30 Years - Alternative 4.



Consistency with Forest Plan Standards:

There are no specific Forest Plan standards relating to landscape diversity therefore a consistency finding can not be made.

Vegetation:

Effects Common To All Action Alternatives:

The action alternatives propose different levels of sagebrush treatment, location of burn units and unit scheduling. Fires affect on the different plant communities and individual plant species will be similar between alternatives. Burning prescriptions are generally the same throughout the alternatives. Prescriptions plan for a mosaic of burned and unburned sagebrush with 40% to 60% of the unit affected by fire.

The target plant species, Mountain Big Sagebrush, is easily killed by fire. Even low intensity fires burning beneath the shrub crown can kill this species. The two other sagebrush species common to the area, Silver and Three-tip, are known to sprout after fire. The percent of sprouting can be quite variable (Bunting 1989). Sites where these species are the indicated habitat type generally have been excluded from treatment. It has been suggested that plant communities where either of these species is present should not be treated by fire. The concern is that these species will increase in cover and dominance on the site. In reviewing past herbicide treatments and prescribed burns in the area this concern is not warranted. Sprouting by these species has occurred but not to any great degree. Within sites that have returned to pre-treatment sagebrush densities these species still comprise only 1-4% of the shrub canopy cover.

The following discussion relative to sprouting of undesireable shrub species is incorporated as a result of public comment.

Other shrub species that may be found in the project area that may sprout vigorously after fire include rubber rabbit-brush, green rabbit-brush, and gray horse-brush. There is some concern that these plants will greatly increase in cover and replace sagebrush as the dominant species on a site. These species are generally found in very low numbers within the project area. Sites where they are abundant are excluded from treatment. Past burns within the area have shown no increase in canopy cover of these shrub species.

Although spring burns will be preferred, each unit has the possibility to be burned either in the spring or fall. In general herbaceous plants respond positively to fire. Their response can be summed in table 1 below. Site specific affects can vary due to fire intensity, soil moisture and season of treatment. Spring burns usually burn cooler and have less affect on non-target plants than do fall burns. For species specific fire effects refer to Hironaka and others 1983, Blaisdell and others 1982, Tisdale and Hironaka 1981, Britton and Ralphs 1978, Fischer and Clayton 1983, Young 1983, Bunting and others 1987, Noste and Bushey 1987.

Table IV-1. General Response of Herbaceous Plants to Fire.

positive		nega- tive
< < < < < < < < <	ANNUALS PERENNIALS GRASSES RHIZOMATOUS COARSE LEAVED BUNCHGRASS FINE LEAVED BUNCH- GRASS FORBS RHIZOMATOUS NON-RHIZOMATOUS	>

Table 1. Generalized directional response of herbaceous vegetation to burning (Mueggler 1976).

The use of fire in those units where Douglas-fir has encroached out into the sagebrush/grass vegetation will hold the succession at an early seral state. These units are characterized by a scattering of conifer seedling and sapling overstory and sagebrush/grass understory. The fire intensity will determine the amount of conifer removal. Generally seedlings will be killed by a light fire with two foot flame lengths. To kill saplings, trees 4 to 5 inches diameter at breast height(d.b.h.), a hotter fire with flame lengths over three feet is needed (Gruell et al. 1986). Burning prescriptions will be written to kill back conifer seedlings but protect most sapling trees. This will maintain the area as an open park-like stand of scattered Douglas-fir with a sagebrush/grass understory.

Fire can be an effective tool in regenerating Aspen clones (Brown and Simmerman 1986, Jones and DeByle 1985, Mueggler 1988). Burning Aspen clones stimulates suckering even without complete overstory removal (Jones and DeByle 1985). Due to the remote nature of much of the West Fork/ Antelope Basin area prescribed fire is an appropriate means of aspen regeneration. Burning prescriptions to maintain a mosaic of burned and unburned sagebrush will limit the fire intensity as it moves through a clone. Fire will generally be restricted to the edges of aspen clones which will cause a thinning of the mature trees and encourage an all-aged stand condition (Brown and Simmerman 1986). Some stands will burn at a higher intensity killing all mature trees and produce an even-aged stand.

If the current aspen management is continued most clones that are in jeopardy will die out and be replaced by conifer or sagebrush/grass vegetation types. In those stands with conifer encroachment the next natural step without fire would be the loss of the aspen and dominance of the site by conifers. In these stands fire will stimulate aspen regeneration and also set back the conifer encroachment. By running fire through the clones the site will be maintained in an early successional state dominated by aspen.

Young aspen suckers are highly selected for by livestock and big game as browse. If livestock and big game concentrate their use on these suckers they can severely damage the aspen and negate any benefits of the treatment. By controlling the timing and intensity of livestock use after treatment and treating large enough acreage to keep wildlife from concentrating in a small area, overuse on the suckers should be controlled.

Herbage production generally increases in the sagebrush/grass, aspen and open conifer vegetation types after fire. The increased production is caused by the reduced competition with shrubs and trees and nutrient input to the soil from the burned material. The flush of new growth will be for the first few years after treatment. Measurement on the District show a 2.0 - 4.0 times increase in herbage production, two to three years after treatment. The increased production will gradually level off and then decline as the site returns to pre-treatment conditions. The length of time for the increased herbage production will vary from site to site. Studies have shown the higher herbage production to last from 15 to 30 years (Harniss and Murray 1973, Johnson 1969, Wambolt and Payne 1986, Gruell and others 1986).

For the first two to three years after a burn graminoids, forbs and to a lesser extent shrubs, are highly palatable to grazing animals. Plants are stimulated by the input of nutrients from the burned organic matter. Burning also removes dead material making more of the plant available to grazing. Livestock and big game will select for burned areas for these reasons. The preference of burned areas by livestock can help in reducing grazing pressure in sensitive areas such as riparian bottoms. The increased herbage production will also help in reducing overall grazing pressure in these areas. As with aspen the selection of burned areas by grazing animals require added management guidelines. Burning units should be of sufficient size to keep animals from concentrating on small areas and overgrazing them. The timing and intensity of livestock use after treatment will be controlled. Burn units will have at least one full season of growing season deferment after treatment.

The effects of the action alternatives on sensitive plants will be similar. As stated above grasses and forbs generally have a positive response to fire. The timing of the burns will generally be before plants have initiated growth in the spring or after they have cured in the fall. The potential for damage to any of the sensitive plants that may occur in the area is very low. Of the eight species considered only four would be found in the drier sagebrush/ grass vegetation type; Jackson's Hole Thistle, Yellow Springbeauty, Keeled Bladderpod and Jove's Buttercup. The other four species, Showy Pussytoes, Idaho Sedge, Wolf's Willow and Alpine Meadowrue, are predominantly found in moist to wet meadows, boggy soil or along streambanks; these habitats will generally not be treated.

Yellow Springbeauty may flower as early as April and run through early June. The sites where this plant grows usually are wet at this time and generally would not carry a fire. Keeled Bladderpod and Jove's Buttercup flower in June and July and would have died back to ground level by fall. All three of these species are relatively small and produce very little foliage. Jackson's Hoie Thistle flowers in July and August and would be dormant by the fall burning period. The plant grows from 12 - 28 inches tall and produces a moderate amount of foliage. A similar species, Wavyleaf Thistle, *Cirsium undulatum*, showed only slight damage by fall burning(Britton and Ralphs 1978).

Cumulative Effects:

Under all action alternatives there is no reasonably foreseeable future action that may affect the targeted vegetation.

Direct and Indirect Effects by Alternative:

Alternative 1 - No Action:

Under this alternative prescribed fire will not be used in managing the sagebrush/grass, aspen and open conifer vegetation types. Plant communities will be allowed to progress successionally to a potential natural condition with the absence of controlled fire. The overall change in the area will be a decline in forage production and a decrease of vegetative diversity.

In the sagebrush/grass type with the absence of fire the shrub canopy will close. Large acreages of heavy (16-25% canopy cover) sagebrush cover will dominate. As the canopy cover increases grass and forb vigor will decline along with forage production (Tisdale and others 1969). Along with the overall decline in forage production there is a loss in forage availability. Dense sagebrush will form a physical barrier to grazing animals. With the reduced forage production and availability, livestock and big game animals will concentrate in the small grassy openings, riparian areas and the other vegetation types where forage is accessible. These areas can easily be overused.

It has been theorized that if these dense sagebrush stands remain untouched by fire they would naturally break up and produce a mosaic of small openings and dense shrubs (Wambolt, personnel communication). The breakup of the heavy canopy cover would be from natural mortality of the sagebrush due to age, insects, rodents and mechanical damage. As the sagebrush canopy opens, shrub competition would drop, allowing grass and forb vigor to improve and increased herbage production would return. No research has been completed to suggest a time frame for this natural progression. The amount of time the sagebrush/grass community would be in a condition of dense canopy cover would generally be in the tens of years.

Under the No Action alternative those areas currently viewed as scattered conifers in a sagebrush/grass community will become a fairly dense stands of timber. These sites would be classified as a Douglas Fir/Pinegrass h.t. (Pfister and others 1977). As the conifer overstory closes the shrub, graminoid and forb species now present on the site would be crowded out and replaced by more shade tolerant species such as Pinegrass, Elk Sedge, and Heart-leaf Arnica.

Aspen clones under this alternative would continue to deteriorate. There is the potential to lose close to 50% of the aspen to conifer encroachment and old age. Surveys done in the Antelope basin area show half of aspen in a deteriorated condition. Clones had no substantial or healthy regeneration and nearly all had some conifer encroachment. Without some natural catastrophic event, these

stands are predicted to convert to conifer or grassland dominated sites. The exact time that all aspen in the stands are lost varies from clone to clone, but within 30 years all of the aspen stands which were surveyed are projected to be lost. Treatment of aspen by cutting will continue but due to the remote nature of much of the West Fork/Antelope Basin area, use of manual treatment will be limited.

Sensitive plants generally would not be affected by this alternative. There is the possibility of some negative affects on these plants as canopy cover closes and forage production decreases. The reduced availability of forage will cause grazing animals to concentrate in smaller areas. Use in open meadows and riparian areas will increase. This increased use could have a detrimental affect on sensitive plant populations that may occur in these areas.

Alternative 2 - 10 year Burning Cycle:

This alternative would treat the sagebrush in a ten year cycle. Approximately 3024 acres would be treated each year. The alternative would favor a landscape mosaic dominated by early successional stages. Late seral stages would be found in the unburned areas within a unit and those sagebrush/grass types that are not scheduled for treatment. Very little of the area would be in the mid seral successional stage.

Forage production would increase under this alternative. Of the three action alternatives the ten year burning cycle would increase herbage production the greatest. The ten year cycle favors the early successional stage and keeps plant vigor and production high.

This alternative would treat the aspen at the fastest rate. The aspen clones would be treated early enough to prevent the loss of those stands currently in jeopardy of dying out.

Conifer encroachment would also be set back. Those units where conifers have moved out into the sagebrush/grass community will be held at an early to mid seral condition. Seedling conifers will be killed but the larger sapling trees will generally be unharmed. The overall appearance of the unit

will be of an open park-like stand of scattered Douglas Fir with a sagebrush/grass understory.

Alternative 3 - 20 year burning cycle:

This alternative would treat the sagebrush in a twenty year cycle. Approximately 1512 acres would be treated each year. A full range of successional stages would be present with a moderate favoring of the late seral stage. Early and mid seral successional stages would be evenly distributed. No particular successional stage will dominate the area.

This alternative will increase forage production and maintain it at the second highest level of the action alternatives. The twenty year cycle maintains this level of forage production by keeping an even distribution of successional stages in the area. Sites are treated before sagebrush cover becomes heavy and starts to affect the vigor and production of the grasses and forbs.

Aspen stands would be treated early enough to prevent the loss of most of those stands currently in jeopardy of dying out. Those stands that are in the worst condition at this time may be lost if treatment is deferred to the later years of the cycle.

This alternative will have the same affect on conifer encroachment as alternative 2.

Alternative 4 - 30 year burning cycle:

This alternative would treat the sagebrush in a thirty year cycle. Approximately 1008 acres would be treated each year. A full range of successional stages would be present with a favoring of the late seral stage. Early and mid seral successional stages would be evenly distributed. Even with heavier favoring of late successional stages, a full range of habitats will be maintained.

Forage production under this alternative would increase from present conditions. Production increases in individual units would average the same as the other action alternatives but overall forage production in the area would be the lowest of the action alternatives.

The alternative would be similar to alternative 3. Due to the longer treatment cycle more of the aspen clones that are currently in jeopardy of dying out may be lost.

The affects of the treatment cycle on conifer encroachment will be similar to the other two action alternatives. This alternative may allow a slightly higher density and canopy closure of conifers after treatment in those units that are deferred to the later years of the cycle. By deferring units to the end of the thirty year cycle seedlings currently established may grow large enough to survive the fire treatment. The overall appearance of the unit will still be of an open park-like stand of Douglas Fir with a sagebrush/grass understory.

Consistency with Forest Plan Standards:

There are no specific Forest Plan standards against which to compare the effects of the alternatives relative to this issue.

Livestock Management:

Introduction:

Maintenance of livestock grazing was a management concern in the integrated resource analyses conducted in the West Fork Madison and Antelope Basin areas. Improvement of forage production for livestock and big game is a part of the purpose and need in Chapter I. The following discussions describe the assumptions and methodologies used to analyze and display the effects of each alternative in relation to management concerns and the purpose and need.

In general, the effects are displayed as the changes in quantities of forage produced and what such changes would mean in range capacities for livestock and big game. Changes in forage production are displayed as estimates of the total pounds produced in a given alternative. The total pounds produced are then translated into the animal unit months (AUM's) of grazing capacity available. Total grazing capacity is then displayed in terms of AUM's available to livestock and big game individually.

Past research and more recent field inventories were studied to develop baseline forage production figures within sagebrush/grassland communities. The study was initiated to determine an average level of grass and forb production within sagebrush communities containing 15-20% canopy cover. Sagebrush communities with 15-20% canopy cover constitute most of the sites where burning is proposed and establishing pre-burn forage production estimates would provide a means to compare anticipated increases with what would occur naturally.

Study #1 - In 1977 through 1979, W.F. Mueggler and W.L. Stewart conducted a three year clipping study of grass and forb production under sagebrush communities with 15-20% canopy coverage. The study was conducted in the Cliff Lake Research Natural Area (RNA) which is very close to many of the sites proposed for burning. The close proximity of the study to areas proposed for burning is therefore very representative of actual ground conditions and extrapolation of the data is not necessary.

Over this three year period, it was found that the average annual grass and forb production was approximately 962 pounds per acre.

The complete study is incorporated in the project file and is noted in the literature citations in the Appendix.

Study #2 - In 1988, W.F. Mueggler revisited the Cliff Lake RNA to follow-up the earlier work. An additional clipping study was performed in the South Grassland area on Cliff Lake bench.

Production of grasses and forbs in this review totalled approximately 1026 pounds per acre.

Details of this study are available in the project file.

Study #3 - During the summer of 1990, personnel from the Madison Ranger District completed further clipping studies in the Antelope Basin area. The study included areas of 15-20% canopy cover on the Horn Mountain pasture of the Antelope Basin allotment and the Shawfield pasture of the Conklin allotment. These clipping studies resulted in grass and forb production figures of approximately 562 pounds per acre.

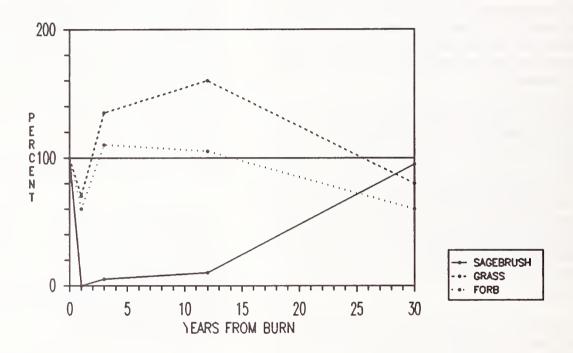
Details of this study are available in the project file.

Baseline productivity figures were determined by averaging the results of the three studies. Average productivity was therefore assumed to be approximately 850 pounds per acre for the West Fork Madison and Antelope Basin areas. The interdisciplinary team thought that this figure was a reasonable assumption.

A second assumption was developed to determine the expected response of the forage in the burned areas. To develop this assumption, past research by Harniss and Murray (See Literature Citations) and recent field examinations by Madison District personnel were reviewed.

Figure IV-6 depicts the relative change in sagebrush, forbs, and grasses over 30 years following fire. (Harniss and Murray 1973)

Figure IV-6. Sagebrush, Grass and Forb response to Fire.



In August, 1990, clipping studies of burned and unburned areas immediately adjacent to each other were conducted by District personnel. The results of the study are displayed in the following table:

Table IV-2. Forage Productivity on Burned and Unburned Areas.

AREA	PRODUCTIVITY-LBS/AC Unburned Burned		FACTOR OF CHANGE	
Conklin Allotment-Shawfield Unit 3, 2 years post burn	625	2050	+ 3.28	
Antelope Basin Allotment.Horn Mtn Pasture. 4 years post burn	500	2450	+ 4.90	
Elk Mountain S&G Allotment.4 years post burn	1800	3900	+ 2.16	

Through analysis of this data, the interdisciplinary team determined that on an average, forage production increases by a factor of 2 in years 1-10 following a burn, decreases to a factor of 1.5 in years 11-15, and returns to preburn levels after year 15. These factors translate into average forage production figures of 1700 pounds per acre (years 1-10), 1275 pounds per acre (years 11-15), and 850 pounds per acre (years 15+).

A third assumption necessary to complete the analysis was to establish a utilization factor for livestock. The purpose and need stated that an objective of the project was to enhance livestock and big game forage. If this is to be accomplished, how much forage would be utilized by livestock, and how much would be available for big game? Forest Service Handbook (FSH) 2209.21 R1, Section 432 suggests that an average AUM requires approximately 780 pounds of forage. Forest Plan Standards for range (Forest Plan, pg II-34) prescribed utilization levels for various vegetative types. In this project area, the dominant vegetative type is grass/grasslike forb. Allowable utilization ranges from 45-55% depending on the grazing system employed.

For purposes of this analysis, the interdisciplinary team agreed that an average of 50% utilization by livestock would be a reasonable figure. The remaining 50% would be available for big game and other resource values. The significance of the forage needs per AUM and 50% utilization will become more apparent in the the discussions of direct and indirect effects that follow.

A fourth assumption, also a feature of all alternatives, is the objective of attaining a mosaic of burned and unburned areas within each burn unit. The ratio of burned to unburned area will vary from unit to unit depending on the specific objectives. The ratios will range from 40% burned and 60% unburned to 60% burned and 40% unburned. Overall, an average of 50% burned and 50% unburned will be achieved on the total acres treated. This assumption is needed as part of the discussion of changes in forage production and discussions related to vegetative/habitat diversity.

The final assumption in the analysis is that the current grazing systems will not change. As was described in Chapter III, the current systems have been in place for some time, and have been very successful. Condition of the vegetation on the allotments is good and trends are upward. Maintenance of these systems and the vegetation trends is the objective as described in the purpose and need.

Effects Common to All Action Alternatives:

On primary ranges, all the action alternatives will result in a net increase in available forage for livestock and big game. As forage increases in quantity and distribution within the pastures, livestock will also be better distributed. They will be drawn to the flush of nutrient rich grasses and forbs on the uplands. This will reduce the pressures on riparian areas and contribute toward maintaining their quality. As quantities of forage increase and livestock numbers remain constant, there will also be additional quantities of forage available for big game. The degree to which forage will be available to livestock and big game is described in the following discussions.

Direct and Indirect Effects by Alternative:

Alternative I - No Action:

Alternative I burns no sagebrush. An effect of this alternative would be a gradual reduction in the forage available for livestock and big game on the primary ranges. As succession continues in the sagebrush habitat types and canopies continue to close, overall grass and forb production would decrease. Access to the forage through the heavier sagebrush canopies would also be reduced. The general decrease in forage and greater canopy covers would encourage heavier utilization in pockets of more open canopies and in the riparian areas. This could result in the onset of more serious resource impacts. Plant vigor would start to deteriorate, soil compaction and erosion would be encouraged, and overall site productivity would be reduced. Heavier utilization of riparian areas would be encouraged with subsequent degradation of riparian values.

The effect on livestock management from the onset of these conditions would be a need to adjust either the number of permitted livestock or the seasons of use. If the same grazing seasons were continued, numbers of livestock could be reduced by as much as 18-20%

This effect is quantified in more detail in the following computations. These computations bring forward the assumptions developed earlier in this section.

As the 30,239 acres of primary range advance through succession and canopy covers achieve 15-20%, average forage production will be 850 pounds per acre.

30,239 acres X 850 pounds per acre = 25,703,150 pounds of total forage.

1 AUM requires 780 pounds of forage.

25,703,150 total pounds of forage divided by 780 pounds per AUM = 32,953 total AUMs of capacity.

It was assumed that utilization by livestock would average 50% of available forage to meet Forest Plan standards.

32,953 total AUMs divided by 2 = 16,477 AUMs actually available for use by livestock.

There are currently 20,131 AUMs of use permitted on the primary ranges. Allowing these ranges to progress through succession will result in 18% less available forage. In order to meet Forest Plan Standards, a re-allocation of grazing capacity will be needed. The overall deficit in forage would equate to approximately 3,654 AUM's.

Alternative II - 10 year cycle:

Alternative II would result in approximately 3024 Acres per year (1512 acres actually blacked with a 50% mosaic) being burned. Forage production on these acres would result in increased forage availability from a livestock and big game standpoint. This alternative would provide the most forage based on the amount of acres treated each year and the availability of that forage. The livestock management system and livestock

numbers would not change under this or any of the action alternatives. Forage produced in excess of that required for livestock will be available for big game and watershed values. The increased forage will result in overall reductions of use as livestock are spread over a broader area on the allotments.

The effects of this alternative are quantified in more detail in the following computations. The same assumptions used in the No Action alternative are used in all the action alternatives along with some additional assumptions.

Under this alternative there would be approximately 1512 acres per year burned. Upon completion of the 10 year cycle, there would be approximately 15,120 acres in early successional stages (years 1-10) and 15,120 acres in late successional stages (years 15+). There would be few areas in the mid successional stages.

Forage production figures for this alternative are as follows:

15,120 acres in early succession X 1,700 pounds per acre = 25,704,000 pounds of forage.

15,120 acres in late succession X 850 pounds per acre = 12,852,000 pounds of forage.

Total production = 38,556,000 pounds of forage.

38,556,000 total pounds divided by 780 pounds per AUM = 49,431 total AUMs available.

With an average of 50% utilization by livestock, 49,431 AUM's divided by 2 = 24,716 AUM's available for livestock.

24,716 AUM's minus the 20,131 AUM's currently permitted will result in an additional 4,585 AUM's of forage available for big game.

Alternative III - 20 year cycle:

Alternative III would result in approximately 1512 acres per year (756 acres actually blackened with a 50% mosaic) being burned. Forage production on these acres would result in increased forage availability from a livestock and big game stand-

point. The livestock management system and livestock numbers would not change under this alternative. Forage produced in excess of that required for livestock will be available for big game and watershed values. The increased forage will result in overall less use within the allotment as livestock use is spread out over a broader area.

Under this alternative there would be approximately 756 acres per year burned. Upon completion of the 20 year burning cycle there would be approximately 7,560 acres in early, 3,780 acres in mid, and 18,899 acres in late successional stages.

Forage production figures for this alternative are as follows:

7,560 acres in early succession X 1,700 pounds per acre = 12,852,000 pounds of forage.

3,780 acres in mid succession X 1,275 pounds per acre = 4,819,500 pounds of forage.

18,899 acres in late succession X 850 pounds per acre = 16,064,150 pounds of forage.

Total production = 33,735,650 pounds of forage.

33,735,650 pounds divided by 780 pounds of forage per AUM = 43,251 total AUM's of capacity.

With an average of 50% utilization by livestock, 43,251 AUM's divided by 2 = 21,626 AUM's available for livestock.

21,626 AUM's minus the 20,131 AUM's currently permitted will result in an additional 1,495 AUM's of forage available for big game.

Alternative IV - 30 year cycle:

Alternative IV would result in approximately 1008 acres per year (504 acres actually blackened with a 50% mosaic) being burned. Forage production on these acres would be maintained at existing levels from a livestock and big game standpoint. This alternative would provide forage for the existing big game and livestock numbers at this time. No increase in livestock numbers or management systems would be made.

Under this Alternative there would be appoximately 504 acres per year burned. Upon completion of the 30 year cycle, there would be approximately 5,040 acres of early, 2,520 acres of mid, and 22,679 acres of late successional stages.

Forage production figures for this alternative are as follows:

5,040 acres in early succession X 1,700 pounds per acre = 8,568,000 pounds of forage.

2,520 acres in mid succession X 1,275 pounds per acre = 3,213,000 pounds of forage.

22,679 acres in late succession X 850 pounds per acre = 19,277,150 pounds of forage.

Total production = 31,058,150 pounds of forage.

31,058,150 pounds divided by 780 pounds of forage per AUM = 39,818 total AUM's of capacity.

With an average of 50% utilization by livestock, 39,818 AUM's divided by 2 = 19,909 AUM's available for livestock.

19,909 AUM's minus the 20,131 AUM's currently permitted will result in a reduction of approximately 222 AUM's of livestock capacity. This alternative would essentially maintain the existing conditions relative to livestock management on the allotments.

Consistency with Forest Plan Standards:

All action alternatives are consistent with Forest Plan range standards.

Watershed:

Introduction:

Sturgis (1975 a,b&c, 1977 a&b, 1979, 1980, 1983, 1986 a&b, 1987, 1990) has done a great deal of work concerning the hydrologic relationships of sagebrush lands. The majority of this work has been in Wyoming and southern Idaho. The sagebrush control employed during this work was spraying of 2,4-D, but the burning of sage would produce the same results. Some of these relationships that are most pertinent to this EIS are:

- 1) Soil Moisture Use. Sagebrush has a two-storied root system, which influences the way soil moisture is used. A dense root network exists down to 60 cm, with a taproot extending down to 180 cm. Water near the plant is used first, and then water usage shifts outward and downward until about the first week of August, when water uptake ceases. Sagebrush control will increase soil moisture where the soil depth is equivalent to the maximum rooting capability of the plant about 2 meters. In shallower soils, any increase in moisture is often used by the replacement vegetation.
- 2) Snow Accumulation and Melt. Plant height controls the depth of snow accumulation, with taller plants retaining more snow on-site than shorter ones.

Often, depth of snow is greater in areas where sagebrush has been controlled. This increase is attributable to the fact that snow intercepted by sagebrush crowns is more susceptible to sublimination, and to the longwave radiation emitted from the sagebrush plant. Sagebrush control appears to have no affect on melt rates, either when the snowpack depth exceeds the plant height or when the depth is within the crown canopy. However, snowmelt proceeds at a much quicker rate when the snow depth is less than that of the sagebrush.

- 3) Total Annual Runoff and Timing. Generally, runoff from sagebrush lands receiving less than 14 inches of precipitation per year is negligible. The project area is very similar to this precipitation regime. Sagebrush control on an entire watershed increased yields 0.42 inches, or about 20% of the total flow. About 65% of the increase came during the snowmelt period, and the remainder as groundwater flow later in the year. Streamflow increases persisted for 12 years.
- 4) Sediment Transport. Sediment transport in the sagebrush zone occurs during snowmelt runoff, with 90% of the sediment moving during 5-10% of the year. Intense summer thunderstorms move the greatest amount of sediment, but their occurrence is sporadic and unpredictable. Oversnow flows, which can occur during late springs when cool weather is followed by a rapid warming trend, cause peak flows that sharply elevate sediment loads. However, sagebrush control on a small

watershed has not shown any increase in sediment yields.

In summary, treating a large portion of the sagebrush on a given drainage has increased the flow of water for a considerable period of time. During that period, little surface erosion and no increases in sediment yields were measured. It is reasonable to assume that should a watershed that has been treated receive a peak precipitation or runoff event before replacement vegetation has become established, significant increases in sediment production would result.

Direct and Indirect Effects Common to All Action Alternatives:

Increases in water yield or sediment resulting from any of the Alternatives will be negligible in terms of effects on the water or fishery resource in the project area. Burn units make up less than 5% of any given sub-watershed in any of the three major drainages, and the cumulative total of all the burn units is less than 5% of the area of the major drainages. Additionally, only 40-60% of the area inside individual burn units will be blackened, so the actual area affected will be much smaller than what is portrayed by burn unit percentages. The fact that such a small area of any given drainage will be treated makes the chance for adverse effects in the stream exceedingly small. The mitigation measures that will be applied (50' buffer strip on flat ground, and 100' buffer strip on ground over 15%) will provide adequate filtering for any erosion that does occur in the burn units.

Cumulative Effects Common to All Alternatives:

As stated in Chapter III, the three major drainages affected by the project do not confluence until hundreds of miles downstream. If there are no direct or indirect effects to the channels on-site, there will be no cumulative effects in the larger drainages.

Consistency with Forest Plan Standards:

All alternatives are consistent with Forest Plan Standards for fisheries and watershed.

Roadless Areas:

Introduction:

The environmental effects on the Freezeout Mountain Roadless Area are analyzed in relation to the seven roadless characteristics and wilderness features presented in Chapter III. Direct and indirect effects are measured for the specific alternatives.

Cumulative effects are measured as a combining of effects from past management activities in the areas, the direct and indirect effects of the alternatives, and the potential effects of reasonably forseeable future actions. Past management activities utilized in the analysis are discussed in Chapter III.

Reasonably forseeable future actions considered in this analysis are the future West Fork Madison timber sale proposal, the assumed continuation of livestock grazing in the Roadless Area, and the continuation of burning projects beyond 1996 that would be necessary to complete the burning cycles described in the alternatives.

The West Fork Madison Timber Sale is located to the North and East of Roadless Area 1-029A with some activities occurring adjacent to the Roadless Area boundary. At this point in the analysis of the timber sale, entry into the roadless area is not being proposed.

Direct and Indirect Effects Common to All Action Alternatives:

Natural Integrity:

With the long history of grazing, sagebrush spraying and burning, and maintenance of fences, water developments, cabins etc, the natural integrity of the area will not be adversely affected any further by any of the alternatives.

Apparent Naturalness:

The existing mosaics of sagebrush and grassland will change but in none of the alternatives is this change expected to occur so quickly that major changes in the appearance of the area will be

obvious. The "black" areas immediately following a burn will be obvious but will be short term in nature. It is doubtful whether the visitor could distinguish whether the burn was natural or man caused. The overall character of the project areas will not differ from the surrounding patterns of sagebrush, grasslands, aspen, and conifer stands.

None of the action alternatives will alter the apparent naturalness of the of the area to any measurable degree.

Remoteness and Solitude:

Opportunities for remoteness and solitude are minimal within the current condition. The additional personnel and vehicle traffic present in the area during the burning periods would increase the levels of human presence for a short period but given the condition of the current settings, this effect should virtually go unnoticed.

None of the action alternatives will adversely affect either of these characteristics.

Special Features and Special Places and Values:

None of the action alternatives propose burning within the Cliff Lake Research Natural Area therefore there will be no impact to the RNA. In all alternatives, one unit (Freezeout #6) is located in close proximity to Elk River which has been nominated as a possible addition to the Wild and Scenic River System. Burning this unit will not introduce any measureable changes within the river corridor and it will not forclose any of the possible options of classifying the river as Wild, Scenic, or Recreational.

Manageability:

None of the action alternatives are proposing the kind of vegetative management that will irreversibly or irretrievably remove the area from future wilderness consideration.

Cumulative Effects Common to All Action Alternatives:

It is assumed that livestock grazing will continue at it's current levels into the reasonably forseeable

future. Reasonably forseeable timber sale activities will not enter the roadless area. Future sagebrush and aspen burning will continue as the burning cycles within the alternatives are initiated.

As described above, direct and indirect effects of the burning alternatives will be very minimal if measureable at all. There are no projected impacts from the future timber sale, and assuming continuation of current grazing levels, there would be no change in either the kind or degree of impacts from grazing management. In taking these factors under consideration and combining the potential impacts of all of them together, it is determined that there will be no significant cumulative effects on the roadless area.

None of the alternatives of the proposed action in combination with other reasonably forseeable actions will irreversibly or irretrievably remove the Freezeout Mountain Roadless Area from future wilderness consideration.

Consistency with Forest Plan Standards:

There are no standards against which to compare the effects or conclusions relative to the roadless issue.

Air Quality:

Direct and Indirect Effects Common to all Action Alternatives:

The burning of sagebrush under any of the action alternatives will cause smoke to be evident in the air for a period of time. Emissions will be subject to the coordinating requirements of the Montana Smoke Management Memorandum of Agreement dated July 31, 1978.

Consistency with Forest Plan Standards:

Coordination of burning activities through the Memorandum noted above and compliance with State and Federal air quality standards is consistent with Forest Plan standards.

POTENTIAL CONFLICTS WITH PLANS AND POLICIES OF OTHER JURISDICTIONS:

The following statements are provided to help define the areas of potential differences between the agency proposing the action (U.S. Forest Service) and the policies, management, and enforcement responsibilities of other agencies with whom the Forest Service cooperates.

Wildlife:

The Forest Service and the Montana Department of Fish, Wildlife, and Parks each manage wildlife but work with differing aspects. The Forest Service manages the land and affects wildlife through manipulation of habitat. The State manages the animals more directly through regulation of seasons, bag limits, and enforcement of other wildlife rules and restrictions.

Potential conflicts exist where the Forest Service proposes actions to achieve National Forest objectives which may not fully satisfy more specific State management objectives for the same area.

Both the Forest Service and U.S. Fish and Wildlife Service cooperate in the management and recovery of Threatened and Endangered species. The Fish and Wildlife Service coordinates and supervises activities relating to T & E species. The Forest Service consults with the Fish and Wildlife Service when T & E species may be affected by a proposed project.

Air Quality:

The burning projects will have a local effect on air quality. Burning activities will be coordinated with the State Air Quality guidelines administered by the Montana State Airshed Group. Emmissions will be subject to the coordinating requirements of the Montana Smoke Management Memorandum of Agreement dated July 31, 1978.

There are potential conflicts between the committments of the State to maintain clean air, and the desire of the Forest Service to meet land management goals.

PROBABLE ENVIRONMENTAL EFFECTS THAT CAN NOT BE AVOIDED:

Wildlife:

Any of the action alternatives will result in a change in habitat diversities. While this change will not affect big game populations for the most part, there will be shifts in the populations of non-game species.

Landscape Diversity:

The action alternatives will initiate changes in the landscape. The distribution and proportions of sagebrush to grassland will change between the alternatives. The rate of change will be gradual and over relatively small segments of the landscape at a time. It is expected that such gradual change will hardly be noticeable.

Freshly burned areas will be blackened and readily visible. This effect is expected to be short term as the grasses and forbs stimulated by the fire will cover the burned area within a growing season.

A positive effect of all alternatives is the regeneration and maintenance of the aspen's contribution to landscape diversity.

Air Quality:

Smoke emissions will temporarily affect air quality in the project vicinity. Through incorporation of State air quality standards and guidelines into burning prescriptions, good smoke dispersal is expected and the effects will be minimal.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES:

An irreversible commitment of resources refers to the loss of production or use of a resource due to a land decision, that once executed, can not be changed. An irretrievable commitment of resources applies to losses of production or use of renewable resources for a period of time.

There are no irreversible or irretrievable commitments of resource production or uses resulting from this proposal.

SUMMARY OF THE RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY:

Long-term productivity refers to the capability of the Forest to provide resources into the future. All of the action alternatives provide levels of forage production to maintain livestock and big game populations both now and into the future. The stimulation of forage production in the mosaics designed into the alternatives will also maintain a diversity of wildlife habitats. Big game, small game, and non-game habitats will be provided throughout the project area now and into the future.

SPECIFICALLY REQUIRED DISCLOSURES:

Effects of Alternatives on Social Groups:

The alternatives do not differ with one another in their effects on minorities, Native American Indians, women, or the Civil Liberties of any American Citizen.

Effects of Alternatives on Floodplains and Wetlands:

There are small bogs, wet meadows, and riparian areas scattered throughout the project area. The wet areas are important wildlife habitat features. Forest Plan standards and guidelines offer general protection to these sites. In the case of this proposal more specific protection is provided to protect the value of wet meadows and riparian sites as feeding areas for sage grouse. Buffers of unburned sage will be retained around the wet areas valued as feeding sites. Burn units will also be set back from stream sides to protect water quality. In combination, these measures will protect the wetlands. See Chapter II, Features Common to all Action Alternatives.

Effects of Alternatives on Threatened and Endangered Species:

There is an active bald eagle nest in the project area. The Forest Service has consulted with the U.S. Fish and Wildlife Service. The result of the consultation is that the project, along with specific mitigation, can be implemented without adverse effect to the eagles.

Energy Requirements and Conservation Potential of Alternatives:

From a global perspective on energy reserves and consumption, the added effects of the action alternatives in terms of petroleum consumption are relatively insignificant.

Effects of the Alternatives on Prime Rangeland, Forest Land, and Farm Land:

The alternatives presented are in compliance with the Federal Regulations for prime land. The definition of prime forest land does not apply to lands within the national forests. The project area does not contain any prime farm land. In all alternatives, Federal lands will be managed with the appropriate consideration of adjacent lands.

CHAPTER V

Public Involvement and Comments



CHAPTER V -- PUBLIC INVOLVEMENT AND COMMENT

Introduction:

This chapter includes the following sections:

- Summary of scoping and public involvement activities prior to the Draft EIS. Also see Chapter II.
- Summary of public involvement between the Draft EIS and Final EIS.
- 3) Brief content summary of the public comments on the Draft EIS.
- Copies of all letters of comment and Forest Services responses to the comments on the Draft EIS.

Letters of comment are organized chronologically based on the date they were written. The letters are numerically indexed for each specific comment or question and Forest Service responses on the page(s) following the comment letter are also numerically indexed. Forest Service responses also provide references to the sections of the document where a particular comment or question is addressed.

Chapters II, III, and IV also contain specific references, or in some cases, a new section of the chapter labeled "Changes Between Draft and Final" where additional analysis or information provided by comments is incorporated.

Summary of Scoping and Public Involvement Activities Prior to the Draft EIS:

On January 10,1990 an internal scoping session was held at the Madison Ranger District in Ennis to identify potential issues and concerns with burning sagebrush, Douglas-fir, and aspen in the Westfork Madison and Antelope Basin Areas.

The potential issues and concerns identified were:

Wildlife: Impacts to elk calving areas, antelope and deer fawning areas, and sagegrouse populations.

User Conflict: Disturbance of hunters and outfitters by the smoke if fall burning were conducted and possible visual impacts of burned areas from the Continental Divide National Scenic Trail (CDNST).

Adjoining Ownerships: Potential of damage to private land and property from escaped fire and the need to coordinate our proposals with management activities on private land, BLM, and Targhee National Forest.

Following the internal scoping, the proposal and potential issues were brought to the public to; (1) introduce the proposal to interested and potentially affected individuals, organizations, and other agencies; (2) identify and develop the environmental issues and concerns that would be addressed; and (3) determine the strategies and criteria that would be used to measure impacts.

A news release was prepared and sent to the Forest and District mailing list and individuals who had participated in the Implementation Analysis on the Westfork of the Madison and Antelope Basin Areas.

Open houses were held in Butte on February 5, 1990; Ennis on February 6, and Bozeman on February 7.

As a result of the open houses and other contacts, eighty eight written responses were received. Public responses were analyzed by the interdisciplinary team on March 21, 1990. The analysis of responses resulted in the identification of twenty common issues or concerns. From this list, significant environmental issues related to wildlife and landscape diversity were formulated which would require definition by alternatives. Several other concerns that would be addressed through discussions of impacts and mitigation measures were also brought forward. Complete copies of all public responses are incorporated in the project file.

To continue public involvement, a Notice of Intent to Prepare an Environmental Impact Statement was forwarded to the Office of the Federal Register on April 17, 1990. The Notice of Intent appeared in the Federal Register on May 2, 1990. As a result of the Notice, additional written responses were received from the U.S. Fish and Wildlife Service, the Montana Department of Fish, Wildlife and Parks (MDFWP), and the Skyline Sportsmen's Association. The first Skyline response requested additional information on the proposal. The response from the U.S. Fish and Wildlife Service provided information and offered assistance regarding compliance with the Threatened and Endangered Species Act (P.L. 93-205). The response from MDFWP requested additional information regarding the description of existing conditions presented in the Notice of Intent. The Department also offered some of their own findings relative to existing conditions and additional thoughts on the values of sagebrush communities.

In June, 1990, a second response from Skyline Sportsmen's Association was received which addressed each of the purposes identified in the Notice of Intent. Some specific concerns were the level to which cumulative effects would be addressed, the need to re-evaluate and change the in-place grazing systems, loss of wildlife habitat, the need for more study and information relative to the relationships of the wildlife and habitats in the project area, potential impacts to soils, that grazing management is the real issue, and a suggestion that "No Action" would be the best action.

All of the comments received after the filing of the Notice of Intent are incorporated in their entirety in the project file.

During the summer of 1990, representatives from the Madison District and MDFWP reviewed the project area on the ground. Existing conditions were discussed and MDFWP further offered suggestions for modifying the proposal on specific burn units. The suggestions ranged from dropping some units from the proposal, deferring treatment of others, to describing the mosaic and percent burned/unburned which would be desirable in the units that would be treated. Specific documentation

of the field reviews and discussions is incorporated in the project file.

A separate field review was scheduled for October 4, 1990 with the expressed purpose of reviewing the project area with the Montana Wildlife Federation, the Skyline Sportman's Association, and the Gallatin Sportsman's Club. These organizations had expressed some particular concerns on the proposed action. There were no representatives from these organizations at the review. A subsequent letter to these organizations expressing the availability of the Forest Service to visit the areas again at the request and convenience of the organization resulted in no additional requests.

In December of 1990, an additional review of the alternatives and wildlife analysis was conducted with MDFWP representatives. The response of the alternatives to the purpose and need as well as the ratios of burned/unburned area within the mosaics was also discussed. No specific adjustments to the proposed action or alternatives were made as a result of this review.

Complete documentation of the internal scoping, public involvement, and analysis of comments is contained in the project file.

Summary of Public Involvement Between the Draft EIS and Final EIS:

On April 25, 1991 we held a public meeting in Butte, Montana to review the DEIS and receive questions and concerns. The meeting was attended by approximately 40 people. Representatives from the livestock industry, sportsmans groups and other interested organizations were present. Complete documentation of this meeting is included in the project file.

The comments I heard from the livestock industry were generally supportive of the proposal. Sportsmen and sportsmans groups expressed specific concerns about the impacts of burning on elk calving areas and more general concens about other wildlife species. We responded to some specific questions and concerns relative to the historically low sage grouse populations and what we felt the reasons for this were. Skyline Sportsman's Association and others were interested in

our grazing management strategies. We responded to these questions with specific information on the types of grazing systems and rotation schedules that were in place on all the allotments in the project area.

A general trend in several of the questions was whether enough research or data was available to support our analysis and findings. My general response to these questions was that I felt comfortable with the amount in information we had and that coupled with professional judgement and interpretation, our level of analysis was adequate and appropriate. Such questions were often presented in general terms with no specific recommendations or references to additional research or data that could have been added to our analysis.

On two occasions we also met with Joel Peterson and Bob Brannon of MDFWP to review our responses to Department comments on the DEIS. One of the areas we discussed at length was the Departments concern about the effects of burning on elk calving areas. The Department had specific recommendations to leave 70% unburned sage in the mosaic within calving area burn units. While I still believe that this objective is more restrictive than it needs to be based on our analysis and findings, I have tried to be more responsive to this recommendation by modifying the objectives for the desired mosaic in all burn units in calving areas to more closely approach the Departments objectives. I acknowledge that I was unable to be 100% responsive to the 70% objective. To achieve a maximum 30% burn in all cases would be very difficult due to variabilities in fuels, weather conditions, terrain, etc. I also find that by restricting the burns to a maximum of 30%, the economic efficiency of burning would be adversely affected. In general, the modifications I made were to achieve a desired mosaic of 50% to 70% unburned sage within elk calving area units. I feel this will help to meet both our objectives while still being responsive to the purpose of the project and maintaining an economically efficient burning program.

Summary of the Public Comment on the Draft EIS:

Public comment is briefly summarized in this section. The complexity and diversity of the comments can best be understood by a complete reading of the letters included in this chapter. How the comments related to an issue or alternative will also be summarized where possible. It is sometimes difficult to determine the specific issue or alternative a comment may be associated with as many of the comments are general in nature, philosophical, or are generally outside the scope of the analysis. In such cases, the Forest Service responses to such a comment are documented in the Response Summary following the letter.

General:

A total of 49 written comments were received. Of these, 9 were from other Federal, State, or County agencies. They included, U.S. Fish and Wildlife Service (USDI), Soil Conservation Service (USDA), U.S. Environmental Protection Agency, Office of Environmental Affairs (USDI), Montana State IGR Clearinghouse (2 letters), Montana Department of Fish, Wildlife, and Parks, Madison Board of County Commissioners, and Beaverhead County Commissioners. There were 12 letters from persons with organizational affiliation and 28 letters from individuals with no apparent organizational affiliation.

The general tone of the comments may be summarized as follows: Letters expressing obvious or stated support of the proposal or other action alternative numbered 24. Letters expressing obvious or stated opposition to the proposal or adoption of the No Action Alternative numbered 7. Letters requesting additional information, analysis, clarification, etc. but maintained a relatively neutral position numbered 18.

Many of the comments were general in nature and discussed philosophical issues rather than specifics. Many comments also expressed general disagreement with Forest Plan decisions and indicated a desire to revise those decisions. These feelings were expressed through disagreement with the Purpose and Need described in Chapter I and the goals, objectives, and standards described in Chapter III. There were many expressions that livestock grazing should be sharply curtailed if not altogether removed from the study area.

There are many instances of general disagreement with analysis methodology or results, and the body of literature cited. In most cases, there were no specific recommendations for other analytical methods or specific references to new or different literature.

Issues:

Issue 1 - Wildlife:

Comments relative to the wildlife issue were both numerous and diverse. Comments that were generally supportive of the proposal also felt that wildlife in general would benefit. Comments generally opposed and many of the neutral inquiries felt that wildlife would be adversely affected.

Comments tended to suggest that a greater range of effects on a more complete list of species should be disclosed. There were also suggestions that more complete references and scientific data be incorporated to support findings. Many of these suggestions were related to the impacts on big game and sage grouse which were areas of special concern.

Impacts to ferruginous hawk, a sensitive species, was of special interest. A couple comments provided additional information and scientific research on the species. This new information was incorporated into mitigation measures.

The greatest number of comments seemed to revolve around the issue of livestock versus wildlife uses and values. Many felt that burning should not be conducted for livestock benefit and that the means to improve forage condition was to curtail or remove livestock from the area.

Issue 2 - Landscape Diversity:

Comments relative to this issue generally fell into two categories. The first was a feeling that current levels of diversity were adequate and needn't be changed. The second was an expression of feelings that diversity should be allowed to develop naturally. The mechanism for natural development would be natural fires.

A few comments also requested additional analysis and clarification of aspen's role in the landscape. Why was the aspen in the condition it was in and why did we feel burning and regeneration was needed?

Alternatives:

Alternative 1 - No Action:

The No Action alternative was favored by several respondents who expressed general disagreement with the proposed action. They expressed feelings that any of the action alternatives would adversely impact wildlife. There were also expressions that the best way to accomplish vegetative management in the area was to sharply curtail or remove livestock grazing.

Alternative 2 - 10 Year Burning Cycle:

Of respondents who generally supported some action, a few expressed strong support for this alternative. The general feelings offered in support of Alternative 2 were; that the values of the additional forage provided would compensate for any additional impacts to other resources, or that the impacts to other resources were very comparable to the other action alternatives.

Alternative 3 - 20 year Burning Cycle (Preferred Alternative)

Most of the respondents who supported some action expressed outward support for this alternative. The general feeling expressed in these comments was that this alternative was a good balance of vegetative management needs to provide for both livestock and wildlife.

Alternative 4 - 30 Year Burning Alternative:

Of the respondents who supported taking some action, a few expressed some support for this alternative. A general feeling gathered from these comments were that if burning were going to take place, it may be best to err a bit on the safe side and not burn as much per year.

General Comments on Alternatives:

As stated earlier, comments were generally supportive, opposed or relatively neutral on the proposal. Analysis of all comments did not lead the interdisciplinary team into design of any new alterntives or significant modification of existing alternatives. There were no direct recommenda-

tions or suggestions to develop any new alternatives.

There were suggestions that we should take another look at the Natural Fire Alternative described in Chapter II, Alternatives Considered but not given Detailed Study.

List of Respondents to the Draft EIS and Letters from all Respondents to the Draft EIS:

- 1) Kemper M. McMaster, U.S. Fish and Wildlife Service, February 22, 1991.
- 2) Deborah Stranton, Montana State IGR Clearinghouse, February 25, 1991.
- 3) Jack Jones, March 7, 1991.
- 4) Jack Atcheson, March 8, 1991.
- 5) George Wuerthner, March 11, 1991.
- 6) Jay Linderman, Hamilton Ranches, Inc., March 12, 1991.
- 7) Don McAndrew, Western Land Brokerage, March 12, 1991.
- 8) Deborah Stranton, Montana State IGR Clearinghouse, March 14, 1991.
- 9) Richard A. Prodgers, March 15, 1991.
- 10) Larry A. Hughes, Hughes Ranches, March 25, 1991.
- 11) Rex Smith, March 26, 1991.
- 12) Vivian Linden, March 26, 1991.
- 13) Jack Fenton, March 28, 1991.
- 14) Stu Burns, March 28, 1991.
- 15) Jack Atcheson Jr., March 29, 1991.
- 16) David I. Moss, Beaverhead County Commissioners, April 3, 1991.
- 17) Walter A. Steingruber, April 8, 1991.
- 18) R.F. Krawiec and Patricia Simmons, April 8, 1991.
- 19) Roger Kujala, April 8, 1991.
- 20) Donna Sitz, April 9, 1991.

- 21) Robert L. Sitz Jr., April 9, 1991.
- 22) James Sitz, April 9, 1991.
- 23) Sherrie Stokman, April 9, 1991.
- 24) Mark Stokman, April 9, 1991.
- 25) S.J. Seidensticker, April 12, 1991.
- 26) Tony Schoonen, Montana Wildlife Federation, April 16, 1991.
- 27) William Patrick, Skyline Sportsmen's Association, Inc., April 16, 1991.
- 28) Mike Stump, April 17, 1991.
- 29) Lex Riggle, Soil Conservation Service, April 18, 1991.
- 30) Robert Anderson, Headwaters RC&D, April 19, 1991.
- 31) John P. Branger, April 24, 1991.
- 32) Maynard Smith, Smith 6 Bar S Livestock, April 24, 1991.
- 33) Carl L. Wamboldt, Montana State University, April 25, 1991.
- 34) Robert Martinka, Montana Dept of Fish, Wildlife, and Parks, April 26, 1991.
- 35) Russ Schulz, Schulz Brothers Ranch, April 26, 1991.
- 36) Sara J. Johnson, American Wildlands, April 26, 1991.
- 37) Robert F. Stewart, USDI, Office of Environmental Affairs, April 26, 1991.
- 38) Mark Scott Gibb, April 26, 1991.
- 39) W.A. Stender, April 27, 1991.
- 40) Tony Schoonen, April 29, 1991.
- 41) Gene Quenemoen, Gallatin Wildlife Association, April 29, 1991.
- 42) John M. Roylance, April 29, 1991.
- 43) Donald E. Pizzini, Environmental Protection Agency, April 30, 1991.
- 44) Kim Enkerud, Montana Public Lands Council, April 30, 1991.
- 45) William Haskins, The Ecology Center, April 30, 1991.
- 46) John C. Anderson, April 30, 1991.

Chapter V

- 47) Madison Board of County Commissioners, April 30, 1991.
- 48) Carroll L Wainwright, Corral Creek Ranch, May 8, 1991.
- 49) Jack Atcheson, May 9, 1991.



UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

Fish and Wildlife Enhancement Federal Bldg., U.S. Courthouse 301 South Park P.O. Box 10023 Helena, Montana 59626

IN REPLY REFER TO:

M.19 Beaverhead NF (I)

February 22, 1991

MADISON RD

FEB 25 1

Mark A. Petroni, District Ranger Beaverhead National Forest Madison Ranger District 5 Forest Service Road Ennis. MT 59729

Dear Mr. Petroni:

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This is in response to your February 4, 1991 letter requesting Fish and Wildlife Service (Service) review of the biological assessment pertaining to Federally listed threatened and endangered species for the Gravelly sagebrush burning project on the Madison Ranger District of the Beaverhead National Forest, Madison and Beaverhead Counties, Montana. The Service has reviewed this biological assessment and concurs with the Forest Service's determination that the proposed project to prescribe burn approximately 1512 acres of sagebrush every year in the West Fork of the Madison River and Antelope Basin areas of the Gravelly Mountains is not likely to adversely affect the threatened grizzly bear (Ursus arctos horribilis) or the endangered gray wolf (Canis lupus), bald eagle (Haliaeetus leucocephalus) or peregrine falcon (Falco peregrinus). In addition, the Service does not anticipate any incidental take of listed species as a result of the proposed project. Therefore, pursuant to S402.13 (a) of the 50 CFR, formal consultation is not required. This concurrence is based on the project design, implementation schedule, and mitigation measures described in the biological assessment. If, after public review and comment, the final project design is changed so as to have effects on threatened or endangered species other than those described in the February 4, 1991 biological assessment, a revised biological assessment will need to be prepared. The Service will then issue a letter of concurrence/non-concurrence on the revised biological assessment.

We appreciate your efforts to ensure the conservation of these threatened and endangered species as a part of your responsibilities under the Endangered Species Act, as amended.

Sincerely,

Kemper M. McMaster

Field Supervisor

Montana/Wyoming Field Office

teny An Th. The Thathe

SDJ/sdj

cc: ARD, FWE, Denver, CO

Grizzly Bear Recovery Coordinator, Missoula, MT

Chapter V

Response Summary

Kemper M. McMaster, U.S. Fish and Wildlife Service, February 22, 1991.

Letter Expresses concurrence with the February 4, 1991 Biological Assessment prepared for the Draft Environmental Impact Statement.

A copy of the Final Environmental Impact Statement and Record of Decision will be forwarded to the Fish and Wildlife Service. A final determination whether the February 4 Biological Assessment needs to be revised due to changed conditions between the Draft and Final Statements will be made.

OFFICE OF THE GOVERNOR BUDGET AND PROGRAM PLANNING

MAR 0 1 1991



STAN STEPHENS, GOVERNOR

RANGER STATE CAPITOL

WILDLIFE PLANNING HAITHUE, MONTANA 59620 RGE CON.

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RECEPTIONIST.

SILVICULTURE. TIMBER TECH...

February 25, 1991

Mr. Mark A. Petroni District Ranger Beaverhead National Forest 610 N. Montana Dillon, Montana 59725

(406) 444-3616

RE: Draft Environmental Impact Statement - Proposed Gravelly Sagebrush **Burning Project** Montana State IGR Clearinghouse SAI No. MT910225-510-F

Dear Mr. Petroni:

The above-captioned draft environmental impact statement has been In order to provide notification to parties that may interested in review and/or comment on the proposal, it will be listed in the next Intergovernmental Review Bulletin issued from this office.

Any inquiries or comments regarding the proposal will be directed to you. Please forward copies of any comments received to the Clearinghouse for our files. We have requested that comments be submitted by March 25, 1991.

The Clearinghouse intends to take no further action on this proposal.

Sincerely,

DEBORAH STANTON Clearinghouse Manager

Enclosure

Chapter V

Response Summary

Deborah Stranton, Montana State IGR Clearinghouse, February 25, 1991.

A copy of the Final Environmental Impact Statement, which includes all public comments, and a copy of the Record of Decision will be mailed to the State Clearinghouse.

Sagebrush EIS is burning issue

By Perry Backus Standard Staff Writer

ENNIS - In what may be a first, the Beaverhead National Forest has released a draft environmental impact statement (DEIS) analyzing proposals to burn 30,000 acres of sagebrush over several decades in the Gravelly Range.

Ennis District Ranger Mark Petroni said the DEIS was the first such document on sagebrush

burning he knows of.

Petroni said that when the issue of sagebrush burning first surfaced, the Forest Service found there was a lot of opposition to the idea.

"There was quite a division between the livestock producers and the sportsmen, particularly the Skyline Sportsmen," Petroni sald, adding the sportsmen's group was concerned about the sagebrush burn being detrimental to wildlife.

The area being considered for the series of burns over a perlod of years is located in Antelope Basin and the West Fork of the Gravelly range, south of Ennis, Petroni said. The 50,000-acre area was treated with chemicals back in the late 1960s, early 1970s.

The sagebrush now growing throughout the area is basically the same age, and the agency would like to use fire to "break up the large stands," he said, adding that would add forage for both wildlife and livestock.

which has a high percentage of nutrients, especially through the winter months, said Petroni, but the area being considered isn't critical winter range.

Sagegrouse are also another consideration when burning sage-

brush, he said.

The agency decided to complete an environmental Impact study not only because of "the highly controversial nature of sagebrush burning In southwestern Montana," but also because the management of the area would be a "long term project," he said.

Petroni said the fires would be stretched over a five-year period. with a 20-year rotation planned

"We're not just looking at light-

ing one fire," he said.

The 140-page document is available at Forest Service offices in Ennis and Dillon. The agency Is asking for wrltten public comment until April 30. Comments should be addressed to the District Ranger, Beaverhead National Forest, 5 Forest Service Road, Ennis, Mt. 59729.

The DEIS examines four alternatives for burning sagebrush to encourage grasses and other vegetation grazed by livestock and big game and to provide a greater variety of wildlife habitats, said Petroni.

Wildlife does use sagebrush, nant vegetation would nich has a high name be 20-to 30-year-old sagebrush. The amount of grasses and other forage available for livestock and big game would continue decreasing as sagebrush increased.

The other three alternatives study the effects of the first five years of long-term burning prograins, where sagebrush would be burned in "mosaics" or uneven patterns, much as naturally

occurring fires would do.

In the second alternative, about 3.000 acres would be burned each year for 10 years. The actual area burned would be about half the total acreage, since fires would be set and controlled to burn uneven patterns or "mosaics." Under this alternative, about onethird of the area would be kept in what range specialists call the "early successional stage," when grasses dominate the scene.

The third alternative looks at the effects of a 20-year burning cycle, in which 1,500 acres would be burned each year, in "mosaic" patterns. Again, because of the uneven burning called for, the actual area blackened each year would amount to about 750 acres. The alternative is also the one the Forest Service currently prefers.

Under the fourth alternative, each year just over 1,000 acres would be subject to "mosalc burning." This alternative would set up a 30-year burning cycle.

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Response Summary

Jack Jones, March 7, 1991.

Participant requested additional information on the proposed action. Locations where the complete document could be reviewed were provided. See letter below.

United States Department of Agriculture

Forest Service

Beaverhead National Forest Madison Ranger District 5 Forest Service Road Ennis, MT 59729 (406)682-4253

Reply to: 1920

Date: March 22, 1991

Jack D. Jones 3014 Irene Street Butte, Montana 59701

Dear Mr. Jones:

I am in receipt of your request for more information on the Gravelly Sagebrush DEIS. A copy of the Summary document should have been sent to you. Copies of the entire draft are available in Butte at the Butte-Silverbow Public Library. Three copies have been sent to the Skyline Sportsman, and Jack Atcheson and Sons have a copy. A limited number of entire documents were printed to reduce costs, so loan copies are also available at the District office in Ennis and the Forest Supervisors office in Dillon.

Please feel free to contact me if you have any further questions or concerns.

Sincerely yours,

Ronald II : Schaff
MARK A. PETRONI
District Ranger

Jack Atcheson & Sons, Inc.

INTERNATIONAL HUNTING FISHING & PHOTOGRAPHIC CONSULTANTS INTERNATIONAL TRAVEL AGENCY



3210 Ottawa Street Butte, Montana USA 59701 Telex 551-643 - FAX 406-723-3318

Telephone

(406) 782-2382

(406) 782-3498

Travel Agency (406) 494-2415



March 8, 1991

Mr. Mark Petroni, District Ranger Beaverhead National Forest 5 Forest Service Road Ennis, MT 59729

Dear Mr. Petroni:

Please send me a copy of the 140-page document regarding the series of burns being considered in the Antelope Basin and the West Fork of the Gravelly Range areas.

I understand the public comment period on this DEIS is open until April 30.

Yours truly,

Jack Atcheson, Jr.

President

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Response Summary

Jack Atcheson, March 8, 1991.

Participant requested and received a copy of the Draft Environmental Impact Statement. See letter below.

United States Department of Agriculture Forest Service Beaverhead National Forest Madison Ranger District 5 Forest Service Road Ennis, MT 59729 (406)682-4253

Reply to: 1920

Date: March 14, 1991

Jack Atcheson & Sons, Inc. 3210 Ottowa Street Butte, MT 59701

Dear Jack:

I have enclosed a copy of the Draft Environmental Impact Statement for the Gravelly Sagebrush project. You are on the mailing list and were to receive a copy of the entire draft. I am sending this copy in case the previous one did not reach you. The comment period is open until April 30. If you have any questions or need further clarification, give me a call. I would welcome an opportunity to discuss this project with you in person at your office. Please let me know if you would like to get together.

Sincerely yours,

MARK A. PETRONI District Ranger

enclosure

Door Bill,

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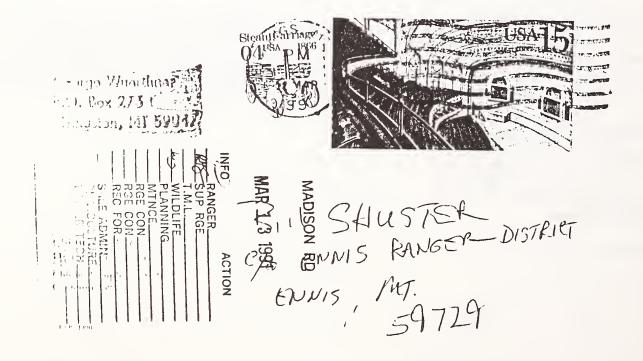
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Chapter V

Response Summary

George Wuerthner, March 11, 1991.

Comments were of a general nature. No questions, new issues or information, or additional analysis needs were identified. The comments will be considered in preparing the Record of Decision.

MAR 1 2 1991

Mark Petroni Madison Ranger District 5 Forest Dervice Road Econis, MY. 59729

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HAMILTON RANCHES, INC. P.O. Box 582 Boulder, Montana 59632 406.225.3838

March 12, 1990

RE: 1950

Dear mark:

I appreciate your sending me a copy of the DE15 for burning sagebrush in the Gravellys. After reacting the DE15, my preference for a course of action is alternative 2, although I don't have much problem with alternative 3. I believe the increase of AUM's in alt. 2, more than balances the decrease in wagegrouse and mule deer habitat. I believe these wildlife are diverse and flexible, and will simply chang their area of habitat. The increase in grass will have inucl more wildlife and economic pluses. We are conducting eitensive wagebrush burning on our private lands in the Turn Brudgle and Big Hole areas. The wown experience that wildlife gravitate to these burned areas, from areas that have not been burned, and greatly benefit from the increased palatibility of the new grass. I would like to commend you on your persistence in this project. I am somewhat aggravated by all the red tape involved in completing such a venture. I hope that you are successful, and that this project serves as an example for future æagebrush and confer burnings example for fundamed lands.
Sincerely, Lay Linderman Mg

Chapter V

Response Summary

Jay Linderman, Hamilton Ranches, Inc., March 12, 1991.

Comments were of a general nature. No questions, new issues or information, or additional analysis needs were identified. The comments will be considered in preparing the Record of Decision.





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March 12, 1991

Mark A. Petroni, District Ranger Madison Ranger District 5 Forest Service Road Ennis, Montana 59729

Dear Mark,

Thank you for the opportunity to comment on the Draft EIS Statement for the Gravelly Sagebrush project.

I fully support and congratulate you on your initiative to manage the vegetative resources in the project area.

I would favor Alternative #2. I feel it would provide the highest level of resource diversity and thereby produce the highest level of benefits to the watershed, wildlife and economic grazing base.

As the woody vegetation is killed and the grass responds, you will find that water flowing from the small springs in the area will increase. This will assist grazing animals to disperse, helping to reduce pressure on the riparian stream bank areas. Because Alternatives #2 and #3 generally affect the same number of acres, I feel the highest level of watershed and habitat benefit would be derived using the ten (10) year cycle.

However, as a close second, I would support your selected Alternative #3.

Respectfully

Don McAndrew Sales Associate

DWM: cag

Chapter V

Response Summary

Don McAndrew, Western Land Brokerage, March 12, 1991.

OFFICE OF THE GOVERNOR BUDGET AND PROGRAM PLANNING



STAN STEPHENS, GOVERNOR

STATE CAPITOL

STATE OF MONTANA •

(406) 444-3616

HELENA, MONTANA 59620

March 14, 1991

Mark A. Petroni District Ranger Madison Ranger District 5 Forest Service Road Ennis, Montana 59729

RE: Draft Environmental Impact Statement - Gravelly Sagebrush Project Montana State IGR Clearinghouse SAI No. MT910312-545-F

Dear Mr. Petroni:

The above-captioned draft environmental impact statement has been received. In order to provide notification to parties that may be interested in review and/or comment on the proposal, it will be listed in the next Intergovernmental Review Bulletin issued from this office.

Any inquiries or comments regarding the proposal will be directed to you. Please forward copies of any comments received to the Clearinghouse for our files. We have requested that comments be submitted by April 12, 1991.

The Clearinghouse intends to take no further action on this proposal.

Sincerely,

DEBORAH STANTON Clearinghouse Manager

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Enclosure

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Chapter V

Response Summary

Deborah Stranton, Montana State IGR Clearinghouse, March 14, 1991.

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RECEPTIONIST

Richard A. Prodgers 2715 Ottawa Butte, MT 59701

March 15, 1991

Dear Ranger Petroni:

Thank you for this opportunity to comment on the summary DEIS for controlled burning of sagebrush in the Gravelly area. I certainly appreciate not having to read a longer document, but the summary DEIS comes off as a very weird and incomplete analysis.

In a general context, the DEIS shows that the Forest Service still treats land as a commodity producer, so you are still a long ways from having a land ethic.

The intent of NEPA is to incorporate consideration of environmental impacts into decision-making along with the traditional concerns, meaning economic and sometimes political factors. It is the lack of economic analysis in the DEIS that leaves me largely ignorant of the trade-offs involved. Why should I want more AUMs for livestock? Fact is, I don't.

Economics is really very important to your analysis, because the overwhelming justification for burning is to create forage for livestock. Personally, I am not going to get any of these AUMs, nor do I know any of the lucky recipients. So I am darned concerned about whether the guys who get them are paying for them. If the livestock program, including burning for forage, is "cowboy welfare", better spit it out.

Let's take a look at summary Table II-12. Good tables are rare, and this one isn't very good. What is the time frame? If, example, you say Alt. 2 will result in an increase of 4,585 AUMs, when will that happen? Alt. 2 is a ten-year program. Is it after ten years? Then maybe you should average the increase over ten years.

How can I compare Alt 2 to Alt 3, which is expected to increase AUMs by 1,495 - but this is a 20 year program. Do I compare one program in 2001 to another program in 2010? My brain can't handle this, and the world in 2010 sure to be very different than any of us imagine. In short, you should spell out the timeframe of Table II-12 so the reader can use it.

What I wanted to do with Table II-12 was assign the present price (boy, would I love to assign the FS <u>cost</u>) per AUM of \$1.81 and see if burning will pay. In short, will the Forest Service make a profit on burning? That is my first interest.

If I make some assumptions and use Alt. 2, apparently the most attractive option in terms of increasing forage, I will assume that over the first ten years you get an average increase of 2293 AUMs, since obviously there will be a slight loss in AUMs the first year. At \$1.81 per AUM, the increased forage will bring the U.S. Treasury about \$4,150 per year. I want to know if the Forest Service can run the burning program for that amount. I doubt it. The Forest Service is a very expensive outfit to run, very inefficient. I'd say if you counted all the costs of planning, meetings, field trips, burning, monitoring, and throw in the DEIS, you would be a lot closer to \$30,000 per year, but creative accounting could make it look better (administration separate, office expenses separate, vehicles and gas separate, etc.).

Let me emphasize that it is crucial that the public know whether the burning turns a profit, because the anticipated ancillary benefits of prescribed burns can be achieved a lot cheaper except for one thing: livestock.

You could let nature take her course and let natural fires burn, but for one thing. Livestock might be hurt, or some capital improvement for livestock might be damaged. Natural burns could increase diversity, kill sagebrush, regenerate aspen, and save on "fire control" too.

You say that you need more forage for big game as well as livestock, but you would have more forage for game by reducing livestock grazing. And I'm guessing the less livestock, the less money you piss down a hole. So the cheapest way to increase game forage would be to cut livestock. In any case, on p. S-5 you say herbicide spraying didn't seem to effect elk (despite the increase in "forage"). The area isn't much as winter range, and (p. S-9) elk populations will not be impacted. So you have never asserted, much less shown, that forage is limiting the elk or other game population. Are you hoping for the same amount of game - but fatter? I am not convinced that a forage increase is necessary for livestock and big game.

Now I know the Forest Service has a hard time tallying these responses if the author isn't explicit, so here are my summary points:

1. DEIS is inadequate because it fails to address the economic realities of the current range program and anticipated effects of burning on revenues and expenses.

- 2. Table II-12 does not allow comparison of alternatives because a time-frame is not provided for alternatives that apparently run from the present to 30 years in the future.
- 3. I oppose burning for livestock, capital improvements for livestock, and in short anything that benefits a favored few and is paid for out of the general fund. When federal livestock grazing pays its way, I will be happy to re-evaluate schemes to provide more grazing.
- 4. I favor a natural burn policy, that would achieve many objectives that I favor, such as a more diverse vegetational pattern, regenerating aspen, etc.

Yours,

Richard A. Prochye is

Response Summary

Richard A. Prodgers, March 15, 1991.

Reviewed Summary Document

- 1. The economic analysis for the project is found in Appendix A of the document.
- 2. Table II-12 was intended to serve as a summary of the analysis, tables, and figures described in detail in Chapters II and IV of the DEIS. Review of the complete document may have helped put Table II-12 into context. Generally speaking, the changes in forage production translated into AUM's is based on a ten year period. Reference: Chapter II, Wildlife; and Chapter IV, Livestock Management Direct and Indirect Effects by Alternative.
- 3. The table is compiled from data discussed in detail in Chapter IV and summarized in Chapter II. We have added addition narration in Chapter II and added timeframes within the body of the table. Also see response to comment 2.
- 4. Reference: Chapter I, Purpose and Need; and Chapter III, Forest Plan Management Direction. The Forest Plan identifies a mix of resources and activities. This project is consitent with Forest Plan Goals, Objectives and Standards and Guidelines. The Forest Service is not limited to management activities that return a profit. Again the economic analysis of the project is found in Appendix A.
- 5. Reference: Chapter II, Alternatives Considered but Not Given Detailed Study Natural Fire Alternative.
- 6. The stated purpose is to maintain current permitted numbers of livestock. Reference: Chapter I, Purpose and Need. Forage is not currently limiting to big game in this area but may become limiting as forage production is reduced over time under Alternative 1. Reference: Chapter IV, Direct and Indirect Effects by Alternative. The Management Areas where the burning will occur are capable and suitable for livestock grazing. Reference: Chapter III, Management Area Goals, Objectives, and Standards. It is outside the scope of this analysis to revisit those Forest Plan Decisions.
- 7. Same response as Comment 1. In addition, the economics of the grazing program on a forest-wide basis is a Forest Planning issue and is outside the scope of this analysis.
- 8. See responses to 2 and 3.
- 9. Reference: Chapter I, Purpose and Need; Chapter III, Forest-wide Goals, Objectives and Standards; and Management Area Goals, Objectives and Standards. The Forest Plan identifies a mix of resources and activities. This project is consistent with Forest Plan Goals, Objectives, Standards and Guidelines.
- 10. See response to 5.

Madison Ranger District 5 Forest Service Road Ennis, MT 59729 (406)682-4253

Reply to: 1920

Date: March 22, 1991

Richard A. Prodgers 2715 Ottawa Butte, Montana 59701

Dear Mr. Prodgers:

I am in receipt of your comments to the Summary DEIS for the Gravelly Sagebrush. The entire document and project files contain the indepth analysis, including an Economic Analysis which is Appendix A of the DEIS. Review of the entire document may answer some of the concerns you brought up. Copies of the entire 140-page document have been sent to the Skyline Sportsman's Club (3 copies), Jack Atcheson and Sons, and one is available at the Butte-Silver Bow Public Library. Copies are also available for review at the District office in Ennis, or the Forest Supervisors office in Dillon. We printed a limited number of entire document in order to hold expenses down.

Your comments will be considered and responded to after the close of the Comment period on April 30, 1991. If you have any questions or need any further explanation please contact me at the District office in Ennis.

Sincerely,

Ronald Y. Schott
MARK A. PETRONI
District Ranger

Mr. Prichard,

Magel 25, 1991

The ANDRUS Timber Sale DEIS

my great-grandfather's first job in 1882 was with a sawmill on south meadow creek in Madison county. The some lands they logged back then are being horvested again. We mined grazed cattle and sheep, and built dams for innigation and electricity.

These industries provided money For roads, bridges schools, hospitals, Nursing homes, and Now Food stamps for some of our worst enemies. Our wise use of these resources is why america is the greatest country since civililization began.

TF we wish for our grandchild the chance to Take his Favorite Lody out for a reasonably priced steak or have a chance at a reasonably priced home or even talc for his babies bottom, the Forest Service had betten print some pamphlets explaining that the wise use of these revewable resources is why america is so great today. Americans are deluged with only one side of the story.

I support alternative 2000 combo on the Andrus
Timber Sale.

I support also the preferred alternative concerning burning sagebrush on the Madison Ronger District.

sincenely,
Hughes Ranch
Janya, Hughes
Box 94 10
McAllisTer, Montana

Chapter V

Response Summary

Larry A. Hughes, Hughes Ranches, March 25, 1991.

Please send me a Copy of
the draft environmental Empact
statement on the 30,000 acres of
Gravelly lange that is being flored
to burn.

Think you

REX SmiTH

Box 2841

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Response Summary

Rex Smith, March 26, 1991.

Participant requested copy of the Draft Environmental Impact Statement. A copy of the Summary was mailed with further instructions for review of the complete Draft. See letter below.

United States Department of Agriculture

orest Service

Beaverhead National Forest Madison Ranger District 5 Forest Service Road Ennis, MT 59729 (406)682-4253

Reply to: 1920

Date: March 26, 1991

Mr. Rex Smith Box 284 Ulm, Montana 59485

Dear Mr. Smith:

In response to your request for information on the Gravelly sagebrush burning project, I have enclosed a copy of the Summary of the DEIS. The entire document is 140 pages and a limited number of copies are available for review. If you wish to review the entire document, please give me or Ron Schott a call at the District office in Ennis (682-4253) and we can make arrangements to have a copy available for you.

Sincerely,

Ronald Y. Schott MARK A. PETRONI District Ranger

enclosure cc:SO Dear Mark Petroni,
Thomk you for the DEIS about
the sanchush peraject on the roadmen
Runger District. I appreciated the
information of all the options.
I support your recommendation
of the 20 year cycle. I've seen
the results of some of the burn
areas and think it's good for
the last use of the land, habitat,
wildlife, grozing, etc., etc. It
works well, lontinue the good
planning & work.

Smarely,
Union Lordon
11171 Pine Butte Rd
333man, mt 5-97/3

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Chapter V

Response Summary

Vivian Linden, March 26, 1991.

Distruct Ranger

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a close second.

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lincerely

Jack Tenton

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Chapter V

Response Summary

Jack Fenton, March 28, 1991.

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March 28,1991

Mark A. Petroni, District Ranger 5 Forest Service Road Ennis, MT 59729

Dear Mark.

Much thanks for the opportunity to comment on your Draft EIS Gravelly Sagebrush.

First off, I concur with your preferred alternative 3, so whatever I comment on from that point forward would be to offer suggestions which you might wish to consider in your final EIS.

I am familiar with only a small part of the project area so some of what I comment on might look like second-guessing, and I hope you could forgive me for that.

- 1) Depending on age, density and distribution of sagebrush in any particular pasture it might be best to burn the bulk of the sage at one time. You can be assured of getting a boost in the nutrient value of the forage created following a burn, and a like desirability response for that forage from both wildlife and livestock. On small burn areas you could get concentrations of livestock or wildlife which could be difficult to control. If you could allow yourself the option to burn a lesser number of units and a greater acreage per unit in any one year it could probably lessen the chance of getting unwanted concentrations of animals on burn areas.
- 2) Be sure to allow yourself a catch-up clause in that weather conditions from year to year might not be compatible with the best of burning plans.
- 3) In regard to elk calving areas you will likely find them in elevational zones where the earlier forbs and grasses are at or near anthesis during the early part of June. Unless the elk herds are deficient in adult bulls such that many of the cows are being missed on their first estrous cycle, the bulk of the calves should be up and traveling with cows by mid-June. What I am suggesting is that above certain elevational zones there is little risk of sage burning having any real effect on elk calving areas.
- 4) Some general thoughts which favor sagebrush burning are as follows:
 - a) Sagebrush which is allowed to become old and decadent provides little or nothing forageable for any wildlife.
 - b) Sagebrush in the diets of deer or elk can be handled in only limited amounts and must be mixed with forbs, grass or other browse or it will act as a bactericide to the gastric

bacteria which are necessary to the digestive processes, and in that event the animal may starve even though it is still foraging.

- The fertility of soil appears to improve more rapidly under a grass regime than under a sagebrush regime in that the grass is more able to put organic matter into the soil.
- In regard to "die Fögelein" (collectively, the little birds) which have a relationship with sagebrush, your project area is likely at or beyond the northern edge of the range for sage sparrows. Vespers sparrows seem to do well where there is only scattered sage. Brewers sparrows, though undoubtedly present in the area, are more common to lower elevation stands of sage. Sage thrashers are probably incidental to the project area. In the western part of Madison County, I find them to be more common along the lower sagebrush breaks along the Bighole and Ruby Rivers. Green-tailed towhees are likely to be more specific to the drier steeper microsites within the project area, and I would imagine that you have no intent to burn such sites.

I wish you luck with aspen regeneration, but I am somewhat skeptical as to how successful the rather small piece-meal projects that John Q. Public will abide can ever be successful. Where you have both moose and elk in the area I rather suspect they are going to hit the aspen regeneration quite hard, moose will probably browse on it for 9 months of the year and you can be assured that elk will be using it in the fall, especially during hunting season when they are seeking cover.

I've included some excerpts from "Ecology of Shira's Moose in Montana" which may be of interest, in case you do not have that 1974, Fish, Wildlife and Parks publication.

Best of luck with your projects.

Respectfully,

Wildlife biologist/Forester/Range Conservationist

U.S.F.S. retired

Response Summary

Stu Burns, March 28, 1991.

- 1. Reference: Chapter IV, Vegetation Effects Common to All Action Alternatives. The size and distribution of burn units were considered when developing the alternatives. It is felt that unit size is adequate to prevent resource damage due to concentration of grazing animals after burning. Smaller units are generally located close together and are scheduled to be burned at the same time. This will help reduce the possibility of unwanted concentrations of animals on these areas.
- 2. The burning schedules are set up to allow for two possible burning opportunities for each unit. One in the fall after the pasture has been rested and the other the following spring. If the unit is not burned in the scheduled period it will have to be deferred until the next five year period of the cycle. Reference: Chapter II, Alternative Descriptions.
- 3. Reference: Chapter III, Existing Condition Elk; and Chapter IV, Direct and Indirect Effects by Alternative Elk.
- 4. Information has been noted. d) Sage Sparrows have been dropped from the text of the document.
- 5. This is a concern we have noted. The Specific Features and Mitigation Measures section of Chapter II has been expanded to include actions to be taken in the event the aspen treatments are not successful in stimulating suckering or if utilization by livestock or big game is at an unacceptable level.

Atcheson Outsitting

3210 Ottawa Dept. Jr. Butte, Montana 59701

JACK ATCHESON JR.

Phone: Day (406) 782-3498 Night (406) 494-5942

March 29, 1991

Mr. Mark Petroni Beaverhead National Forest Madison Ranger District Ennis, MT 59729

Dear Mark:

I have carefully read over your EIS. I think it was very well done. My compliments to you. Documents such as this really place all the cards on the table.

After examining the pros and cons that the EIS laid out, it is quite apparent to me that the only real benefit is directed in the feed for cattle. That seems to be the sole benefit of this type of mass manipulation of vegetation.

Therefore, I would support only the "no action" alternative.

Yours truly,

Jack Atcheson, Jr.

JJR:slr

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Chapter V

Response Summary

Jack Atcheson Jr., March 29, 1991.

BEAVERHEAD

County Commissioners



Dillon, Montana

April 3, 1991

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Mr. Mark A. Petroni District Ranger Madison Ranger District 5 Forest Service Road Ennis, Montana 59729

Dear Mr. Petroni:

After reviewing and discussing the Gravelly Sagebrush Draft Environmental Impact Statement Summary the Beaverhead County Commissioners give their support to Alternative III-20 year cycle. We feel that this Alternative would benefit the area involved the most.

Sincerely,

David I. Moss

Chairman Beaverhead County Commissioners

:pk

Chapter V

Response Summary

David I. Moss, Beaverhead County Commissioners, April 3, 1991.

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Box 65 Willow Creek, MT 59760 April 8, 1991

Mr. Mark A. Petroni, District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

Re: 1950

Dear Mark:

Although I'm not directly involved with the Gravelly Sagebrush Project, I feel very strongly that sage burning is very helpful to the re-establishment of grass and forbs, therefore being of considerable benefit to livestock and big game.

It appears that you have well covered the concerns of wildlife species directly dependent on sage for feed and cover, and riparian areas. I, too, believe that Alternative III would be the most viable alternative for all concerned.

Walter a. Sleingruber

Walter A. Steingruber

Chapter V

Response Summary

Walter A. Steingruber, April 8, 1991.

APR 1 0 1991

4-8-91

RANGER Langer - Madism Ranger Untrict De co project; this was is very familiai to us as we attempt to recreate (between the cow sies!) in this part of the Madison Wistrict several dozen times each year My knowledge of the area clearly indicates an over used AND abused level of livistock use. If the excrement from livestock isn't precluding me's use of the area, then the over-graned conditions are - its a dudful shame the land is so poorly heated to benefit welfare ranching Land management cortainly resures attention for improvement of this area but not for 2 current levels of livestack use - livestock use should a least be significantly I severely reduced if not curtailed totally. after twenty yours of managed improvement (preceded by 80 years of abase) in 2010, livestock re-introduction maybe allowable IF it can be done for better than susently 3 for now, leto include in the preferred alternative the removeal of domestic linestock

> Attrawee Latricia Limmons

Response Summary

R.F. Krawiec and Patricia Simmons, April 8, 1991.

- 1. Reference: Chapter III, Vegetation, Past Activities and Existing Condition; and Livestock Management, Past Management and Existing Condition; and Table III-4, Affected Allotment Summary.
- 2. Reference: Chapter I, Purpose and Need. A stated purpose is to maintain current livestock numbers. This is the site specific analysis on whether to burn and how much to burn. Allotment management planning decides on the specific stocking levels on each allotment.
- 3. The Management Areas where burning will occur are capable and suitable for livestock grazing. Reference: Chapter III, Management Area Goals, Objectives, and Standards. It is outside the scope of this analysis to revisit those Forest Plan decisions.

District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

Sir:

I would first like to thank you for sending me a copy of the DEIS concerning the proposed burning of certain acreage in the Gravelly Range. It is obvious that considerable work went into the preparation of said document. I appreciate your desire to improve habitat conditions. However, my feelings towards prescribed burning are less ambitious. Alternative I suggests no burning although several types of "declines" are predicted. Alternatives III and IV carry with them much of the good you have associated with II but less acreage will be burned. For that reason I prefer Alternative IV. Thank you for your time and consideration of my input.

Sincerely.
Roger Kujala

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Chapter V

Response Summary

Roger Kujala, April 8, 1991.

APR 1 0 1991

April 9, 1991

Madison Ranger District 5 Forest Service Rd Ennis, MT 59729

Dear Ron.

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I am writing this letter concerning the sagebrush burning policy in the Beaverhead National Forest. I would like you to please consider sagebrush burning as part of your forest management policy. I feel that it is a benefit to wildlife and grazing both for the following reasons.

Sagebrush burning changes the age of the plants in an area, which gives a diversity of age and plants, benefitting both wildlife and cattle. It restarts the succession of plant life in the area, and since sagebrush are prone to overtake other plant life, opens up areas within the sagebrush for use. Basically, burning does not eradicate the sagebrush, just controls it. It also burns off the old rank grasses and brush, which are not palatable, while the new grasses and brush which emerge after the burn are where we always see the antelope and deer feeding.

We feel that you have done an excellent job with your management in the past, which <u>includes</u> using sagebrush burning. This has made the Beaverhead National Forest a home of plentiful wildlife, and of some of the best grazing areas in the country. Thank you for the opportunity to state my opinion.

Aoure Sitz

Donna Sitz

Chapter V

Response Summary

Donna Sitz, April 9, 1991.

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April 9, 1991

Madison Ranger District 5 Forest Service Rd Ennis, MT 59729

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Best regards,

Robert L. Sitz, Jr.

Robert I Stop

Chapter V

Response Summary

Robert L. Sitz Jr., April 9, 1991.

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April 9, 1991

Madison Ranger District 5 Forest Service Rd Ennis, MT 59729

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Best regards.

James Jet

James Sitz

Chapter V

Response Summary

James Sitz, April 9, 1991.

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April 9, 1991

Madison Ranger District 5 Forest Service Rd Ennis, MT 59729

Dear Rom,

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Best regards,

Sherrie Stokman

herre Stituon

Chapter V

Response Summary

Sherrie Stokman, April 9, 1991.

April 9, 1991

Madison Ranger District 5 Forest Service Rd Ennis, MT 59729

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Best regards,

111 11-Add

Mark Stokman

Chapter V

Response Summary

Mark Stokman, April 9, 1991.

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_ 0,	~ /	Comments on DEIS - Giavally Sagebrush project

Controlled burns is by far the best tool a vaible for range improvement we have. INE know Mother Nature has always used it until we started to utilize the grass and have intensive fire suppression. Let the lage tation accumulate as was done on the Boardooth Game Range a Yellowstone Park than Nature will take over.

Grass is the super watershed. We have done a lot of sagebrush spraying a controlled burning on our private lands and we've created + improved springs + creeks which were unknown before during my 75 years.

Alternative #2 (loyn burning cycle) is definately my choice. You would only blocken 7,497 A. of the designated burn a rass of 14,994 or approx 50% and this only amounts to blacken approx 1/5 (20%) of the sagebrush types within the entire management area. The amount of increase in forage production & AUM's for wild life a Livestack should speak for itself: Imagain what could be done with twice this amount of octual burn area. Greatly increase water in springs & streams throughout the entire year creating better wild life &

livestock management. Improve fishing + recreation, additional water for irrigation and water power.

Yes, we do need sagebrush but I'm certain if at least 50% is left that would be sufficient.

Douglas Fir Invasion, encouraged by sage brush has and will become a major factor in reducing avaible forage. I've seen many acres where sage as well as grass have been virtually 100% dostroyed - once prime grass types. The management area where you are going to control burn has many acres of dense timber 4 cover for wild life so additional timber areas are not needed nor advisable.

The F.S. prefered alternative #3 definitely does not go far enough nor soon enough to meet the immediate or future needs. If it had been started loyeors ago I might agree, but due to circumstances beyond the F.S. control (objections, required studies etc.) It has not been possible. It has been 20-30 years since squebrash control has been virtually stapped. We know spraying did worlds' of good but was not ideal.

In the DEIS it states, "The proposed action is designated to maintain the quantities of forage needed to sustain permitted numbers of livestick and meet forage needs of Big Game."

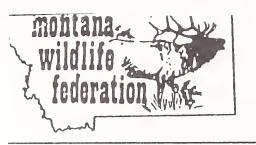
Whe have now reached an uprising of No cows in 93', using riparian area as the total tool in proper utilization studies causing recomended grazing usage outs on virtually every

Verised grazing management plan by F.S. or BI. M. We not only have to produce more forage but also make the feed more desirable in order to encourage livestock & game not to spend so much time in the highly desireable riponan areas. Controlled burns is our only Hope:

Chapter V

Response Summary

S.J. Seidensticker, April 12, 1991.



P.O. Box 6537 Bozeman, MT 59715 (406) 587-1713 STATE AFFILIATE OF THE

NATIONAL WILDLIFE FEDERATION

EARTH DAY - EVERY DAY

16 April 1991

Mark Petroni, District Ranger 5 Forest Service Road Ennis, Montana 59729

Re: Gravelly Sagebrush Burning Draft EIS:

Dear Mark,

The Montana Wildlife Federation appreciates the opportunity to submit comments on the draft EIS.

- We would like to refer you to the comments and material that we submitted after our public meetings in Butte and Bozeman several months ago dealing this subject. We would like to see those comments included and incorporated in the final EIS.
- In reviewing the draft, we have the same concerns as we expressed earlier. Different grazing systems should be worked into the present allotment plans, such as a true rest-rotation system before any area land treatments are considered.
- We also feel that such leading experts such as Dr. Carl Walmbolt, Dr. Gus Harmay as well as Joe Egan should evalute the entire area before any burning is carried out. All of these understant the values related to sagebrush communities and wild-life as well as for livestock.
 - Our primary concerns with the draft are that most of the wildlife concerns are not adequately addressed and no scientific data is utilized throughout the draft dealing with harmfull effects of burning, loss of top soil, errosion, loss of watershed areas and loss of wildlife habitat. Most big game animals such as deer, elk and antelope hide their calves and fawns in sagebrush areas to help protect them from preditors.
- The Iraft also conveys the idea that burning will increase AUMs and tasks poor grazing practices that actually reduces AUMs. Is this fair to the leasees and other public land users?? If there is a great deal of soil and soil nutrients lost due to burning, how is this going to improve the renge for livestock or wildlife???
- We support and endorse the comments made by our affiliate club, the Skyline Sportsmen's club of Butte. We have worked very closely with this organization in the past by attending field trips and meetings which basically oppose most sagebrush burning.
- We rely heavily on the local wildlife biologists recommendations and in most cases, they oppose burning sage on public lands because it has such a detrimental effect on wildlife.

Your consideration of our past comments and concerns will be greatly appreciated. We emphasis that we would like all materials and data submitted by Skyline and our organization to be included together in the final draft.

Sincerely,

Tony Schoonen

Chairman Public Lands

Response Summary

Tony Schoonen, Montana Wildlife Federation, April 16, 1991.

- 1. All comments and materials received in the initial scoping process and responses to the DEIS have been reviewed and evaluated and are a part of the project file. Reference: Chapter II, Description of Scoping and Public Involvement.
- 2. All allotments currently have approved allotment management plans with successful grazing systems in place, many for over twenty years. True Rest-Rotation is being practiced. Reference: Chapter II, Livestock Management; Chapter III, Livestock Management, Past Management; and Table III-4, Affected Allotment Summary.
- 3. Anyone is welcome and encouraged to review the area. A specific invitation was extended to the Wildlife Federation for an October 4 field trip to the project area. No representatives of the Federation attended the review. A subsequent letter documented this and extended further invitations to view the area. No requests were received. A decision will be made on this proposal prior to any subsequent field review. Reference: Chapter II, Description of Scoping and Public Involvement.
- 4. Reference: Chapter II, Environmental Issues, Issue 1-Wildlife; Chapter III, Description of the Affected Environment, Wildlife; and Chapter IV, Wildlife Effects. The Literature Cited section contains 66 scientific research documents cited within the document. The EIS displays the environmental consequences by alternatives, whether they are positive, negative, or no effect. Addressing the effects on wildlife is one of the most significant elements of the entire analysis. Also Reference: Chapter III, Affected Environment, Soils and Geology; and Chapter IV, Watershed Effects.
- 5. Reference: Chapter I, Purpose and Need. A stated purpose is to maintain the quantities of forage needed to sustain permitted number of livestock. Reference: Chapter II, Table II-5 Aum's of Forage Produced; Chapter III, Forest-wide Goals, Objectives, and Standards; and Range Standards.
- 6. Same as 2 above.
- 7. See 5 above. Also Reference: Table IV-2, Forage Productivity on Burned and Unburned Areas; and Chapter IV, Livestock Management.
- 8. See 3 Above. Also Reference: Chapter II, Description of Scoping and Public Involvement. A separate field review was scheduled for October 4, I990 with the expressed purpose of reviewing the project area with the Montana Wildlife Federation, The Skyline Sportsmen's Association, and the Gallatin Sportsmen's Club. These organizations had expressed some particular concerns on the proposed action. There were no representatives from these organizations at the review. A subsequent letter to these organizations expressing the availability of the Forest Service to visit the areas again at the request and convenience of the organization resulted in no additional requests.
- 9. Reference: Chapter II, Description of Scoping and Public Involvement; Chapter III, Forest-wide Goals, Objectives, and Standards; Wildlife Standard 1, Elk. Coordination with the Montana Department of Fish, Wildlife and Parks has been intensive. Copies of all reviews, meetings, and recommendations from the Department are enclosed in the project file.

Chapter V

10. See Response to 1 above.



Skyline Sportsmen's Association, 19 Inc.

Box 173

Butte, Mo	Ma 5970 action
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Mark Petroni, District Ranger 5 Forest Service Road Ennis, Montana 59729

Re: Gravelly Sagebrush Burning Draft E.I.S.

Dear Mark:

We have reviewed the draft and find it disappointing but not surprising that the Forest Service would continue to pursue such a program of questionable value and benefits. Plans to burn sagebrush on secondary range to pull livestock off primary range is a very questionable practice. It appears burning is being promoted as a means to increase AUMs for livestock and your EIS clearly indicates this to be the case i.e. you are burning to increase AUMs to prevent reducing current AUMs. Benifits to wild-life are very questionable, in fact, research information shows just the opposite. Sagebrush manipilation is detrimental to wild-life.

4 Your EIS indicates AUMs will be increased for livestock and wildlife through burning. Wildlife use of range is not allocated on the basis of AUMs, that is a livestock allocation. The main reasons are that food habits for big game species are different for different species such as habitat use, seasonal distribution etc., they do not lend themselves to a livestock classification. To burn sagebrush and attempt to justify it for wildlife with no scientific data presented, is very questionable.

6 In our early response to burning sagebrush, we provided you copies containing a great deal of scientific research, letters from experts i.e. Dr. Carl Walmbolt, Joe Egan, also information from ecologists' Dr. Daubenmire, none of which was mentioned or acknowledged in the draft EIS --WHY?

Absolutely no data is presented on the effects of sagebrush spraying on the same areas and the loss of habitat and wildlife inthe 60's and 70's. No data is presented to justify spraying of sagebrush in the past or the consequences and now the burning of these same areas. In Chap. 4 Enviornmental Consequences: Assumptions are being made that minimal impacts will occur to wildlife but no data is presented to substantiate these assumptions.

Ounder the Freedom of Information Act, we would like an acknowledgment of receipt of the information, the date it was received and what your review comments were on these documents. This information should be attached to this comment letter. There is no mention in the EIS of all this scientific information and



Skyline Sportsmen's Association, Inc.

Box 173

Butte, Montana 59703

-2-

how it was incorporated into the Draft. If for some reason these documents were not forwarded from Supervisor Prichards' office, please allow us time to forward copies to your office because these documents are the most important portion of our comments.

9 A great deal of research information is available related to the importance of sagebrush and sagebrush communities for wildlife, but there is a continuing reluctance to accept or acknowledge that data, Why? Again, your bibliography indicates none of the information on this important subject that we sent to you.

The EIS glossary has definitions of grazing systems but the definitions for rest-rotation grazing is incorrect. That is deferred-rotation grazing. Enclosed is a 1967 Forest Service publication on grazing systems, that explains the various systems, including rest-rotation grazing. The glossary should be corrected. The EIS mentions rest rotation grazing (glossary) but no reference is made in your bibliography to published information on the subject by A.C. Hormay.

The EIS indicates wildlife habit will be improved, AUMs will be increased and more diversity will be provided, however there is no scientific information presented to substantiate any of these forecasts. Burning could decrease AUMs through increased soil erosion and loss of soil fertility. AUMs would need to be reduced then. Sigebrush is also important for watershed protection, but that is not memtioned in the EIS. Sagebrush has value ecologically, and that is not mentioned either sivestock interests should be informed now, that AUMs could just as well be reduced through burning and that may be necessary. You should be honest about the consequences.

16 No data is presented on soil loss by each allotment as a result of past sagebrush spraying. 17 t would appear also that rest periods under grazing are being used to accomodate burn programs more than to provide the needed rest for the vegetation and for the improvement of the allotment.

18 There is no reference how the Montana Department of Fish Wildlife and Parks' biologists were involved and what their concerns and comments were. 19 The draft should include all letters from sportsmen's groups, MDFWP, etc. in the Appendix. No letters are shown, what happened to all the letters, material and comments regarding concerns over sagebrush burning? Again, these comments should be shown in your draft EIS.



Skyline Sportsmen's Association, Inc.

Box 173

Butte, Montana 59703

-3-

20 The draft EIS does not indicate how the range is evaluated and where. 2 What will be the plan to reduce AUMs on unsuccessful burns? 22 he EIS suggests that burning is a quick-fix project.

23The EIS should indicate what plan will be implemented if AUMs are reduced by burning and how reductions will occur. The EIS should present information on scientific data being collected on sagebrush communities prior to any burning to compare the results after burning. No information is presented on how burning will improve range condition by grazing allotment where is each grazing allotment and what is the current grazing formula (plan) on each.

The alternatives for burning do not describe the rotation grazing plan to be used. The alternatives do not suggest that a cycle or two of the grazing plan be followed before burning is considered. The no-burning alternative only suggests AUMs will need to be reduced(15-20 %). In other words, false promises are being made to the range users that the Forest Service will indeed increase the AUMs. The 20 year rotation alternative fails to show what grazing plan is proposed, how AUMs will be increased or what will happen if the burning cecreases AUMs because of additional soil erosion and the loss of land productivity. If soil is eroded from burning, will the Forest Service reduce more AUMs?

The EIS fails to address the issue of weather conditions that would prevent burning and the problem then of implementing the grazing system. The EIS does not mention the consequences of out of control burns such as the recent occurrence near Red Lodge where the taxpayers will foot a \$150,000 bill for damages to ranchers fences.

The economic effects section does not address the loss of wildlife values through the loss of habitat destruction through burning. For example, the sagebrush near timber that elk use to hide their calves and deer and antelope hide their fawns.

No grazing program is proposed or suggested for improving the range without sagebrush burning. The EIS is one-sided toward sage-burning to increase livestock AUMs. Big sagebrush often times is the only available protection for certain watersheds where very thin soils are prevelent.

We again ask that our previous information be included with these comments related to impacts on big game and upland bird



Skyline Sportsmen's Association, Inc.

Box 173

-4-

Butte, Montana 59703

habitat and the ecological problems associated with sage eradication projects. The information we provided was the result of years of research and you seem to be ignoring it.

No mention was made of the numerous petitions prepared and submitted to you at the early public meetings on February 5th, and the contents of the petitions 35 hey showed overwhelming opposition to burning public sagebrush on public lands. Will the contents of this petition be shown in the EIS?

The Skyline Club has worked hard on cooperative projects with area ranchers and we have a good relationship. This proposal to burn sagebrush will create annimosity between sportsmen and ranchers, which is a conflict we don't want. We are being placed in a position to support the burn plan, and we don't.

The EIS shows no need for any wildlife habitat studies or inventories prior to any treatment. Does this mean that all information is known? No scientific information is presented. It appears that everything was figured out on a computor!!

In summary, we are again opposed to this proposal and instead age the Forest Service to look into better grazing programs, especially rest-rotation grazing and plan on going through the formula at least one cycle; preferrably two before even considering burning. Youtside experts should be scheduled to look at the area prior to any burning to determine if it is necessary at all we have had a long experience and documentation of poor management practices by the Forest Service and we are prepared to stop you from continuing this blemished record.

Thanks for allowing our club to comment on the Draft and hopefully you will utilize these comments and all prior material in your finally proposal.

Sincerely

Blondy Patrick President

cc Ron Prichard
MDFWP
Montana Standard
RC&D

Response Summary

William Patrick, Skyline Sportsmen's Association, Inc., April 16, 1991.

- 1. All burns are on suitable livestock range. Vast majority (95%) are on primary livestock range. Reference: Chapter II, Alternatives, Alternatives Considered in Detail, and Features Common to all Action Alternatives, Livestock.
- 2. The stated purpose is to maintain current permitted numbers of livestock. Reference: Chapter I, Purpose and Need; Chapter II, Table II-5 Aum's of Forage Produced; and Chapter III, Forest-wide Goals, Objectives, and Standards; Range Standards.
- 3. Reference: Chapter II, Environmental Issues, Issue 1-Wildlife; Chapter III, Description of the Affected Environment, Wildlife; Chapter IV, Wildlife Effects. The Literature Cited section contains 66 specific citations within the document. No additional scientific documents or citations were provided in this letter. EIS displays effects by alternatives, whether they are positive or negative.
- 4. AUM is a measurement of a quantity of forage. One AUM is the amount of forage used by a 1000 # cow for one month which is 780 pounds. The AUM is only used for comparison of the amount of forage produced between alternatives. Reference: Chapter IV, Livestock Management; and Glossary under Animal Unit Month.
- 5. Reference: Chapter I, Purpose and Need. Also see Response to 3 Above.
- 6. All comments and materials received in the initial scoping process and responses to the DEIS have been reviewed and evaluated and are a part of the project file. Also FOIA request letter of April 19, 1991 acknowledged receipt of these attachments. Reference: Chapter II, Description of Scoping and Public Involvement.
- 7. Sagebrush spraying in the past is acknowledged in the document. Documentation of spray projects and evaluation are on file at the District office in Ennis. This EIS is the site specific documentation of the effects of prescribed fire, as it relates to the existing conditions. Reference: Chapter I, Purpose and Need; Chapter II, Alternatives Considered But Not Given Detailed Study, Aerial Spraying with 2-4-D; and Chapter III, Elk, Sagegrouse, and Vegetation, Past Activity and Existing Condition. Also see response to 3 above.
- 8. FOIA request was acknowledged on April 19, 1991. See project file.
- 9. Same as 3 and 6 above.
- 10. Definition in Glossary is correct for both rest-rotation and deferred-rotation grazing. Reference: Glossary under D for deferred-rotation and R for Rest-rotation. Definition is consistent with A.C. Hormay and Range Management Handbook definitions. See Project file.
- 11. Reference: Chapter IV evaluates both positive and negative environmental effects. In some cases the effects were not measureable. Literature Cited contains 66 specific citations. See 2,3,5,7 above.
- 12. See 2 above. Also reference: Chapter III, Soils and Geology; Table IV-2 Forage Productivity on Burned and Unburned Areas; and Chapter IV, Watershed Effects.

- 13. Reference: Chapter III, Affected Environment for Water and Fish, Soils and Geology, and Chapter IV. Watershed Effects.
- 14. Analysis did not question the ecological values of sagebrush. Reference: Chapter III, Forest-Wide Goals, Objectives, and Standards; and Literature Cited.
- 15. See 2 and 4 Above.
- 16. See 7, 12, and 13 above.
- 17. The opposite is true. The burning schedule is designed into the current grazing systems, not the reverse as noted in the comment. Reference: Chapter II, Features Common to all Action Alternatives, Livestock Management; and Chapter IV, Livestock Management, Introduction.
- 18. Reference: Chapter II, Description of Scoping and Public Involvement. MDFWP representatives have been involved throughout the analysis. All field reviews, meetings, and recommendations are documented in the project file.
- 19. See 6 and 18 above.
- 20. Reference: Chapter III, Vegetation Affected Area and Existing Condition; and project file, Maps of each allotment with study plots.
- 21. See 2 above. Do not anticipate any need for reductions.
- 22. The stated purpose is to initiate a long term management plan. Reference: Chapter I, Proposed Action and Scope of Proposed Action; Chapter III, Forest-wide Goals, Objectives, and Standards, and Management Area Goals, Objectives, and Standards. It is the agencies desire to be pro-active in this management proposal rather than wait for a problem to develop.
- 23. Reductions in AUM's are not anticipated. Reference: Chapter I, Purpose and Need; Chapter II, Livestock Management; and Chapter IV, Livestock Management.
- 24. Reference: Chapter IV, Livestock Management; and Figures IV-1, IV-2, IV-3, IV-4, and IV-5.
- 25. Map showing allotments and pastures was and is incorporated in the envelope on the back cover of either the Summary or the entire document. This map is titled Grazing Allotments within the Project Area. Plans and systems by allotment is shown in Table III-4, Affected Allotment Summary.
- 26. See responses to 2, 4, 17, 21, and 25 above.
- 27. References: Chapter II Table II-2 and Alternative descriptions; See 2,4,17,21,25 above.
- 28. Such an analysis would be highly speculative and is outside the scope of this analysis. Prescriptions are designed to minimize the possibility of escaped fire. Reference: Chapter II, Natural Fire Alternative. Preliminary burning prescriptions have also been incorporated in Features Common to all Action Alternatives in Chapter II.
- 29. Reference: Appendix A, Economic Effects. Impacts to elk calving are also disclosed in Chapters II and IV.

- 30. See responses to 12,15,17,20,21,22,23,25,27 above.
- 31. See Response to 2 above.
- 32. See 12 and 13 above. Reference: Chapter IV, Watershed Effects.
- 33. See 6 above.
- 34. See 6 above.
- 35. Just the opposite is true. The evidence would suggest that there is much more support than opposition to the project. In the initial scoping, 88 written comments were received of which 63 (72%) were supportive and 25 (28%) were opposed (12 of the 25 were the referenced petitions). Written responses to the DEIS total 48 with approximately the same split as shown above. Votes, however, are not counted when evaluating a project. The content of a comment as it relates to the project is the only thing evaluated. All comments are incorporated in the project file.
- 36. The intent is not to create animosity. Project is designed to implement the 1986 Beaverhead Forest plan.
- 37. Reference: Chapter II, Specific Features and Mitigation Measures, Wildlife; Monitoring, Sagegrouse and Elk; Comparison of Alternatives; Chapter III, Description of the Affected Environment, Wildlife; and Chapter IV, Environmental Consequences, Wildlife.
- 38. See 25 Above. Also reference: Chapter II, Forest Plan and Management Area Goals and Objectives; and Chapter III, Existing Condition, Vegetation and Livestock Management.
- 39. See Response 3 to Montana Wildlife Federation. Special field trips and invitations were extended to all interested parties including Skyline with nobody showing up for the field tours or responding to our invitations for further field reviews. Reference: Letter to Skyline on October 5, 1991 in project file. Also reference: Chapter II, Scoping and Public Involvement.
- 40. No documentation of alleged past management problems was provided.

Madison Ranger District U. S. Forest Service 5 Forest Service Road Ennis, MT 59729

Dear Sir:

I am interesting in receiving a copy of the EIS (#910069) for the Gravely- Sage Brush Burning Project. Any information you are able to submit to me would be greatly appreciated. If need be I could borrow a copy to review.

I assume this is the Gravely Range area in the Ruby River area. I spent a lot of time in this area in the summer and during hunting season so am somewhat interested in this EIS.

THANK YOU,

Mike Stump MIKE STUMP

415 - 12th Ave HELENA MT 59601

Phone: 442-7189 (after 4)

MADISON RD

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Response Summary

Mike Stump, April 17, 1991.

Participant requested copy of Draft Environmental Impact Statement. A copy of the Summary was mailed along with instructions where a copy of the complete document was available for review in Helena. See letter below.

United States
Department of
Agriculture

Forest Service Beaverhead National Forest Madison Ranger District 5 Forest Service Road Ennis, MT 59729 (406)682-4253

Reply to: 1920

Date: April 19,1991

Mike Stump 415 - 12th Ave. Helena, MT 59601

Dear Mr. Stump:

Thank you for your letter of April 17, 1991, requesting information on the Gravelly Sagebrush Draft EIS. I have enclosed a copy of the Draft Summary Document for you. The entire document is 140 pages long and is available for review at the Montana State Library, 1515 East 6th Ave. In Helena. The draft document is open for public comment until April 30, 1991.

The document covers the West Fork of the Madison and Antelope Basin areas which are south and east of the Ruby River in the Gravelly Mountain Range.

If you have any questions or need any further assistance please give me a call.

Sincerely,

MARK A. PETRONI District Ranger

Mad a Petran?

United States Department of Agriculture

Soil Conservations P.O. Box 295 Sheridan, Mt (406) 842-5741

ARR 2 2 1991

18 April 1991

Mark Petroni District Ranger Madison District Office Ennis, Mt. 59749

Dear Mr Petroni,

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Thank you for the opportunity to comment on the Gravelly Sagebrush DEIS Summary. I found the document clear and concise, demanding little time for review.

The proposed action is designed to maintain diversity of wildlife habitats through: (1) maintaining a variety of canopy covers in sagebrush/grassland communities, and (2) maintaining a variety of successional stages in aspen. Based on the summary and a conversation with Ron Schott, I favor alternative 3 - 20 year burn cycle as the best scenario for meeting your management objectives.

Although your map of Sagebrush Habitat Type and Elk Calf Locations identifies the extent of the community, it is difficult to assertain the variation in canopy densities within the Type. I was initially concerned about the affect of the burn sizes and the subsequent modification of foraging behavior of domestic livestock. I felt that too small of burns, associated with unburned areas of dense canopy, could lead to cattle congregating on the burns and could result in a serious distribution problem. This could potentially develop into the need to adjust the allotment management plans so that rotations would be based on utilization of the burned areas. Ron Schott assurred me that the size of the burns were of adequate size and the canopy densities of the remaining sagebrush is variable enough that a reasonable utilization pattern will be maintained, for the entire pasture, during post-burn grazing.

I hope that alternative 3 does not provided excessive amounts of available elk summer forage. My opinion is that the current elk population level is at best satisfactory. Any additional numbers would lead to more conflicts. I recognize that elk populations are limited by winter range. However, many "un-tapped" haystacks still exist in the valley.

I also favor alternative three because of its projection to maintain aspen stands, as well as possibly benefit small game and non-game species prefering either old sage or grassland.

If alternative 3 is selected, I would encourage the district to adopt the mitigation measures identified in the DEIS summary (page S-4).

If you have any questions or need additional clarification on my comments, please feel free to contact me.

Sincerely,

Lex Riggle

Lex Riggle

SCS Madison County Range Conservationist

Chapter V

Response Summary

Lex Riggle, Soil Conservation Service, April 18, 1991.

HEADWATERS

, MADISON RD

Resource, Conservation and Development Area, Inc. 305 W. Mercury, Suite 211

Butte, Montana 59701

(406) 782-7333 • FAX # 782-9675

APR 2 6 1991

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April 19, 1991

Mr. Mark A. Petroni District Ranger Madison Ranger District Ennis MT 59729

Dear Mr. Petroni,

The Headwaters RC&D Area, Inc., Big Game Committee has reviewed the Draft Environmental Impact Statement for the Gravelly Sagebrush Burning.

The Big Game Committee supports Alternative III. This alternative provides a good balance between livestock grazing and wildlife habitat management. With only 10% of the 42,168 acres of sagebrush blackened in a 20 year period it is going to have a negligible effect on wildlife. The increased forage production will benefit both wildlife and livestock grazing. Absolutely no less than 10 percent should be burned.

We appreciate the opportunity to comment on the draft EIS. Sincerely,

Bob Anderson, Chairman

Big Game Committee

Chapter V

Response Summary

Robert Anderson, Headwaters RC&D, April 19, 1991.

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To Whom It May Concern:

Concerning the Gravelly Sagebrush Burn Proposal and DEIS:

It seems to us that you have put quite alot of thought and time into developing these burn programs. You've demonstrated the benefits to wildlife and to the grazing aspect. You have shown how these proposed burns would affect habitat of the wildlife which with the 3rd and 4th proposal would increase or maintain. The increase in vegetation would definitely be positive for both wildlife and livestock. The improved vegetation would also greatly remove the potential for overgrazing.

We find it hard to believe that a sportsman, outdoorsman or rancher would object to these ideas. Proper wildlife, cattle, and recreational management and proper balance of vegetation are the things that will make the forest a place for all to enjoy. Just a little added statement concerning the people that may be opposed to the burn because of the benefit it may have for the stockman. Wildlife not only live on forest they also live on private ground. Cattle and sheep are managed as to their time on either.

We believe the 3rd or 4th would be the best proposals for controlled burning of sagebrush and for the best success in revegetation. Perhaps if Yellowstone had done the same thing the fires of 1988 wouldn't have been so devastating.

Low M Bre

Lorene M. Branger

Chapter V

Response Summary

John P. Branger, April 24, 1991.

APR 2 9 1991

SMITH 6 BAR S LIVESTOCK

P. O. BOX 107

GLEN, MONTANA 59732

406-835-3441

April 24, 1991

Mark Petroni, District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

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Dear Mark,

I have gone over the summary of the DEIS of the proposed Gravelly sagebrush burning project on the Madison Ranger District. I have also attended two meetings where you, Ron Schott and others have presented your plans for blackening some of the areas. In addition, I have attended a SRM summer range tour in 1989 in the Antelope Basin and have seen some of the sagebrush and dying aspen stands. With this background I feel I have some knowledge of the situation there.

First of all, we all know these areas were burned over naturally by wild fires for many many years in the past. Now, in order to properly manage livestock that use the range, many range improvements have been constructed (fences, water developments, etc.) so uncontrolled fire would be very destructive.

I feel that Alternative 3, a 20 year cycle of burning, would be a productive but safe alternative since only 10% of the sagebrush in the area will be burned. It seems to me that under Alternative 3 you are protecting small game and nongame species habitat as well as enhancing forage for livestock and large game animals.

I also believe that since these allotments have been in a grazing system for many years it shows that sagebrush will take over good grassland areas and that some sort of control will have to be initiated, such as your proposal, in order to maintain a good balance of forage for livestock and game as well as healthy cover for other species. It should also help major riparian areas by opening up forage at the top in high country. It will also leave an esthetically pleasing landscape for the people that live and work in the area as well as others that use the area for pleasure.

Again I would like to recommend Alternative Number 3.

Thank you for the opportunity to comment on this proposal.

Sincerely,

Maynard Smith

Chapter V

Response Summary

Maynard Smith, Smith 6 Bar S Livestock, April 24, 1991.



MONTANA | Department of Animal and Range Sciences

Montana State University Bozeman, Montana 59717 406-994-3721

MADISON RD

APR 2 9 1991

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April 25, 1991

Mark A Petroni, District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

Dear Mr. Petroni:

Thank you for furnishing me with the summary of the DEIS for the Gravelly Sagebrush project. My interpretation of your project is based on that summary. Purposely my comments will be broad in their nature as I do not have the benefit of the complete DEIS with detailed project specifics.

It would be wonderful if range ecosystems were so simple that broadly applied management techniques like sagebrush burning would result in positive benefits for all resources. However, that is not true as there are always trade-offs. The proposed actions in your DEIS are not exceptions. Facts do not support the contentions that habitat will improve for antelope, and sagegrouse with a burning program. Sagegrouse are obligates to sagebrush and the ties of antelope to sagebrush are nearly as great. Mule deer and elk use sagebrush communities to meet a variety of needs also (it does not have to be winter range). To infer that any wild population will increase through this project is to assume that too much sagebrush is the "limiting factor" for that population. Research supports the opposite contention, that in fact there is often a negative impact. Certainly, the populations will not increase due to burning of sagebrush.

The DEIS also makes a precarious assumption in claiming that herbaceous forage production will increase following burning. There are studies that show that may not occur, especially on Idaho fescue ranges like proposed for burning.

In conclusion it would seem there is no logic to support any reduction of livestock to sustain or improve game numbers within the proposal area as related to sagebrush coverage. At best it is a gamble that livestock forage will be improved by burning. Certainly wildlife should not be used as an excuse for burning

sagebrush under your circumstances. There are a number of assumptions in the DEIS on these matters that have been incorrectly interpreted from the literature body available.

It is not my intention to be critical of the management option offered by sagebrush burning, but, instead to encourage clarity of the facts which may identify trade-offs. Under circumstances such as prevail on the proposal site it is likely such trade-offs will be realized. I encourage your agency to explore the situation in greater depth before proceeding. That should be done to insure that indeed any benefits will be realized and in fact have not been out weighed by negative consequences.

Sincerely,

Carl L. Wambolt

Professor of Range Science

CLW:jc

cc: File

Response Summary

Carl L. Wamboldt, Montana State University, April 25, 1991.

Reviewed Summary Document.

- 1. Reference: Chapter II, Comparison of Alternatives; and Chapter IV, Environmental Consequences. The EIS displays effects by alternative, whether they are positive or negative. We did not project any increase in wildlife numbers due to this project. Habitat needs for the variety of wildlife species found in the project area will be provided. The burning proposal will affect the sagebrush density and ecological stage of the plant communitee within the burn units.
- 2. Reference: Chapter III, Vegetation, Past Activities; Chapter IV, Vegetation, Effects Common to all Action Alternatives; and Livestock Mangagement, Introduction; and Table IV-2, Forage Productivity on Burned and Unburned Areas. We acknowledge that within the body of literature the response of herbaceous forage to fire can be quite variable. Fire intensity, season of burn, soil type, soil moisture, species compostion and habitat type all affect the post burn response of herbaceous forage. Clipping studies completed within the project area have shown a 2.16 to 4.90 increase in herbaceous forage production, two to four years postburn, from unburned to burned sites.
- 3. Reference: Chapter I, Purpose and Need. Suggests incorrect assumptions have been made from literature but does not list any.
- 4. Reference: Chapter III, Affected Environment; and Chapter IV, Direct and Indirect Effects by Alternative. The EIS displays effects by alternative, whether they are positive or negative.

Montana Department of Fish, Wildlife & Parks

1400 South 19th Bozeman, MT 59715 April 26, 1991

Mark Petroni, District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

Dear Mark:

This letter will serve as our department's response to the Gravelly Sagebrush Draft Environmental Impact Statement (DEIS).

The Montana Department of Fish, Wildlife and Parks (MDFWP) appreciates the opportunity to comment on this DEIS. Hopefully this evaluation of sagebrush burning as proposed in the DEIS for the Gravelly Mountains can also be applied to future planning efforts by your agency.

The outcome of your decision regarding the alternatives in the DEIS will not affect the procedure our department will follow in making on-site recommendations on any vegetation manipulation project, including sagebrush burning. We believe that on-ground investigations aimed at site specific situations are necessary for making sound recommendations.

One more comment is necessary before we discuss the specifics of the document. There are a number of claims in the DEIS which are either incorrect, or cannot be applied in general terms relative to the discussion of: the affects of sagebrush burning on wildlife; the necessity for this type of habitat manipulation; and inter-relationship of wildlife, livestock, and forage availability in the area. For instance, the inferences in the DEIS that sagebrush communities have to be managed is incorrect. Management may be desirable on certain site specific situations if the goal is to increase forage for cattle or to create a more "open" vegetative aspect for antelope. In general, most sagebrush grasslands (even those in advanced successional stages - at or near climax condition) are already providing optimum habitat conditions for the wildlife species presently using the area. communities essentially at equilibrium or "climax" condition with the existing soil and climate do not need to be artificially managed to be maintained, since they are "self-perpetuating" (Odum 1959 - pg 256). Again, to make the point clear, the potential of improving habitat for certain species on specific sites may exist in a few situations. However, the document is not correct in stating that sagebrush burning in 1 the area covered by the DEIS, generally is beneficial to wildlife.

As you are aware, sagebrush/grassland habitats are very valuable for wildlife. The importance of sagebrush cover for elk calves, mule deer, grouse, etc. is well documented. This permanent cover is even important on properly grazed livestock allotments, since the grazed pastures could potentially have the residual (hiding) cover removed each year. This is one of the reasons big sagebrush is so valuable, as it is relatively unaffected by grazing animals such as livestock.

Your document did a good job of covering the types of wildlife utilizing the Gravellies and we feel no repetition is needed here.

In the following discussion of the document, we will try to categorize some of what we feel are the major issues:

ISSUE (1) - DEIS asserts that sagebrush communities, if not "managed," will decrease in their value for livestock and wildlife because they will lose diversity. It also inferred that forage (grasses and forbs) will become so reduced as to be nearly non-existent or insignificant in the understory of big sagebrush (i.e. "When canopy cover increases over 15%-20%....These sites appear as shrubland stands with few small open pockets of grasses and forbs." - page lll-11, DEIS).

Sagebrush communities are not less diverse in Response: nature than those held in earlier successional manipulation practices like burning. Odum (1971) discussing plant succession in his text book FUNDAMENTALS OF ECOLOGY states ... "diversity (species) tends to be high in older communities and low in newly established ones." Sagebrush communities consist of brush, forbs and shrubs in a structurally and species-wise diverse setting. It has been well documented that the decline in grass and forbs (that occurs as a sagebrush community matures) will cease to further decrease as that community approaches equilibrium (climax condition) with local soil and climatic conditions. Studies in established mature sagebrush stands have demonstrated that grass and forbs will stabilize and will often increase over time (Robertson [Nevada] 1971; Anderson and Holt [Idaho] 1981; and Wambolt & Payne [Montana] 1986). It was noted in the DEIS that Mueggler and Stewart (when measuring areas in the Cliff Lake Research Natural Area) found grass production similar in sagebrush with canopy coverage of 15-20% between the period 1977-79 to 1988 (pounds/acre actually showed a slight increase during the period pg 1V-19 & 20, DEIS). Properly grazed (managed) livestock allotments, sagebrush communities on summer range generally contain more than adequate quantities of forage for the wildlife using the

As stated in the DEIS, it is true that early successional stages of sagebrush communities that are created when you eradicate big sagebrush will often contain greater <u>quantities</u> of forage (grasses and forbs) for a limited number of years. Also, <u>if</u> you

are basing your livestock grazing capacities on this increased amount of forage, then sagebrush communities will have to be managed to set-back succession. However, this manipulation of the sagebrush habitat then becomes important for livestock feed - not for wildlife feed. Our department is not aware of any shortage of feed for big game summering in the Gravelly Mountains.

Regarding the burning of sagebrush to increase grass in this area, there is a strong need for caution which is not present in the DEIS. The DEIS has Identified Idaho fescue (Festuca idahoensis) as the major grass component. Numerous studies have documented that burning negatively impacts Idaho fescue in the short and long term, and repeated burning could eventually result in providing less Idaho Fescue, not more (Hironaka et.al. 1983). In a review of 17 different studies concerning burning areas containing Idaho fescue the department reviewed, the short term reaction of that plant was negative in 13 cases and neutral in 4. The long-term reaction was negative in 12 cases and neutral in 4. In none of the studies did Idaho fescue respond positively (Jorgenson 1990).

ISSUE (2) - There are general assertions in the DEIS that burning sagebrush communities will nearly always be good for wildlife (more forage for big game, more forbs for grouse, more vegetative diversity, improved habitat quality for antelope, etc).

Response: While these assertions may have validity in some local situations, on an area-wide basis they are entirely too simplistic and "sugar coated." Some of the more specific assertions are discussed individually.

Assertion - Big game benefit from forage created by a burn. It is true that green-up following a burn can be attractive to big game. However, so is a bale of alfalfa put out on a deer or elk winter range. This says absolutely nothing about the need those big game animals have for that additional forage resource. In fact, the bale of hay obviously has some potential serious negative implications as can the loss of sagebrush cover after a burn. The "bottom line" is we are not aware of a shortage of forage for big game animals anywhere in the summer range of the Gravelly Mountains.

As perhaps a side note, the short-lived attraction of big game to a burn can be similar to the attraction those animals find on range that was not burned, but previously grazed by livestock. A major reason for this attraction may have less to do with the kind of treatment (grazing vs burning) than with affect of the treatment: that being the production of succulent vegetation during the growing period following the treatment (Jourdonnais 1985).

Assertion - Grouse species will benefit from the increased number of forbs following a burn. Studies have shown sage grouse to utilize openings created by burns. However, the benefits of burning to grouse have to be evaluated on a site by site basis to determine if additional openings are needed. Most sagebrush communities contain adequate amounts of forbs utilized by grouse and the loss of cover may negatively offset any benefits gained by additional forbs. Forbs, which are primarily important during the summer months are very likely not the limiting factor to the presence of sage grouse in the Gravellies. We are not aware of any sagebrush burn/grouse studies where bird population increases were attributed to burning.

Assertion - Sagebrush communities continue to mature and grow old and become less vegetatively and structurally diverse. This in turn makes them less valuable as wildlife habitat. As discussed earlier in this letter, this is not an accurate statement. mature sagebrush grassland communities appear to be dominated by a large, single age class of shrub. However, in areas that have not been abused by improper grazing practices, close inspection will often reveal a variety of different aged shrubs coexisting with a good compliment of grasses and forbs in the understory. example of such an area is the Cliff Lake Natural Area located in the area covered by this DEIS. Here, in the big sagebrush/Idaho fescue habitat type (Mueggler and Stewart (1980), livestock grazing has not been permitted for over 40 years. Mueggler and Stewart described this area as follows: "...scattered, multi-aged populations of sagebrushabundant understory of grasses and These big sage vegetative types contain a mixture of cover and forage that many communities lack. Based on this information, it is not correct to assume that there is a need to create an edge effect in sagebrush communities by burning to improve wildlife habitat. Rather, the validity of improving sagebrush grassland community for a particular wildlife species would have to be considered on a site by site basis.

Assertion - Habitat for antelope could be improved by burning to set back succession and create more "open" country (reducing height and density of sagebrush). Our department would question the validity of improving habitat for antelope based only on the parameters (sagebrush height and density) discussed in the DEIS without conducting an on-site inspection. Several points should be kept in mind when considering a particular site relative to antelope habitat: adequate antelope habitat may exist in adjacent areas (note that high habitat diversity already exists as stated under Existing Conditions, pg. S-6, DEIS); some sites may be better suited to other species that benefit from higher sagebrush densities; and the need to improve antelope habitat beyond that which already exists could be questionable in light of the fact that populations of that species are already above private sector tolerance levels on winter range in the Madison valley.

Assertion - Without burning, many aspen communities will be It is true that aspen communities are important wildlife habitats and should be maintained. It is also correct to recognize that it may be necessary to manage these stands, particularly if they are short-seral stages of eventual conifer sites. here is that burning aspen may not be addressing the major problem as to why they are not reestablishing. Our experience using exclosures placed around dying aspen stands both on our Porcupine Game Range and in Yellowstone National Park (Kay 1990) has shown that the problem can be related to wild (as well as domestic) ungulate browsing. No aspen reproduction in these stands was allowed to survive prior to protection. The stands within these exclosures have now totally recovered and are self-perpetuating despite the lack of fire. The point is that it should not automatically be assumed fire will cure all the ills, if in fact that's not the reason the aspen is sick. We suggest the use of a few exclosures on decadent aspen stands not burned, but adjacent to similar sites that are burned. These can then be compared to better assess the affect of the burn treatment. In the event aspen stands are burned, monitoring should follow to determine if the allowing for adequate reestablishment. reestablishment does not occur, we strongly suggest the grazing system be re-evaluated to determine if a change would be necessary to correct the problem.

Assertion - Burning will create attractive feeding areas in uplands that will tend to pull cattle off of sensitive riparian areas. This is an often used rationale for burning sagebrush. Is there any data to support this assumption? Increased nutrient levels in grasses following burns have been shown to last only a couple of years at best, so this impact would be short lived (VanDyke et.al. 1988). As noted earlier, the attractant to grazing animals appears to be the succulence of forage that can be created by previous grazing as well as burning. Possibly the greatest reason for questioning this assertion, is the fact that cattle will tend to heavily utilized riparian areas first before making much use of uplands (regardless of the condition of the upland). The forest service could pursue other techniques to reduce livestock use of riparian areas such as proper water distribution, grazing system adjustments, more rest periods, etc.

Assertion - Locations with encroaching Douglas fir need to be managed to maintain the existing grassland complex. This certainly would be a concern to livestock interests in areas where forage producing rangelands would be eventually reduced. Here again, however, these need to be evaluated on a site by site basis. Scattered Douglas fir/sagebrush grassland vegetation types are more often than not an excellent ecotone habitat type for wildlife. Also, the creation of more cover by increasing Douglas fir in the Gravellies would likely be an overall benefit for big game since security cover is in less supply than foraging areas.

In this portion of our response to the DEIS, we would like to address some general concerns:

Rabbitbrush - The DEIS acknowledges the presence of rabbitbrush and other species that sprout after fires. It would well to use caution on those sites where you could end up replacing big sagebrush (that does not resprout after fire) with less desirable species such as rubber rabbitbrush.

Steep slopes - The DEIS proposes a standard that would require a buffer of sagebrush along riparian areas with steep slopes. While this certainly would help, you might consider that steep slopes not be treated at all due to the very real potential of erosion. The initial aftermath of a burn results in decreased ground cover and often creates soil conditions less permeable to water infiltration (Brown, et. al. 1985 and Salih et. al. 1973). Forest service experts in watershed and soils should determine at what minimum degree a slope would be at risk.

Fall burns - DEIS proposes to burn in either fall or spring. Spring burns would have the likest potential of harming plants (when properly timed) and the lowest potential of a fire getting out of the target area.

Mitigation measures - The mitigation measures listed on page 11-6 of the DEIS do not reference of any of the comments our department made on site specific proposed burn sites related to the area covered by this document. These comments were made by our field biologist Bob Brannon in two letters to your agency in 1990. Had those comments been addressed in this document, it would have given us an opportunity to respond with an evaluation of those actions. If they are addressed in the final EIS, there will not be an opportunity for a DFWP response.

It should be obyious from our evaluation of the DEIS that we have some concerns about the generalization that burning is going to benefit wildlife. While we disagree with many of your general assessments of the affects of burning, the following are in our view some of the positive aspects of your program: allowing onsite review and recommendations by our department of specific projects; allowing public involvement; planning to burn only in mosaic patterns and avoiding "large scale eradication" that was typical of many of the earlier sagebrush spray operations; and planning to monitor the burns after treatment.

We would like to conclude our analysis of the Gravelly Sagebrush DEIS discussing a few final points:

Monitoring - The Forest Service intends to base sagebrush management on a rotational philosophy. In the event plans for burning are implemented, if sagebrush does not return over time on any of the burned sites, adjacent areas should not be treated if

wildlife impacts are to be kept to a minimum.

Elk populations - The DEIS indicates that elk populations did well following the earlier sagebrush eradication programs in the late 1960's and early 1970's 18It should also be pointed out elk are presently flourishing despite the fact that 86% of the area is in late vegetative successional stages of sagebrush (pg 11-9, DEIS).

Present range condition - Despite references for a need to manipulate present sagebrush stands, the DEIS indicates that the "Condition of the vegetation dothe allotments is good and trends are upward" (pg lV-22, DEIS). This is in light of the estimate of present vegetative succession at 86%.

Vegetative diversity - Although present vegetative succession in the sagebrush type is reported at 86% (which the DEIS implies indicates low diversity), the area overall appears to be "loaded" with diversity: "Overall fandscape diversity in the West Fork/Antelope Basin area is quite high. The vegetation runs from grassland and wet meadows, to sagebrush/grass slopes, to willow and aspen stands, to open conifer/grass stands to dense coniferous forests" (pg 111-10, DEIS).

Elk Calving Habitat - The DEIS questions the degree of value that our department puts on sagebrush as being important for calving elk. DFWP biologists recognize that any cover during the calving and fawning period is valuable for hiding and protecting young animals. This cover does not have to be sagebrush, but could be any tall vegetation that would provide security for newborns. Sagebrush is especially suited for this task, however, because it often provides a permanent, dense and uniform cover source that is superior to most other vegetation types. It should also be pointed out that the amount of sagebrush that is listed as affected by burning in calving areas (Table 11-8, DEIS) may be far too conservative. These figures are apparently based on the location As MDFWP research of radioed elk during the calving season. biologist Ken Hamlin observed, radio relocations represent "general" areas of importance, but say nothing about areas without (111-6, DEIS). In other words, a sagebrush area should not be eliminated as a potential calving site just on the basis that there were no radio relocations made there.

The assertion on page IV-6 of the DEIS states that "...generally elk do not use sagebrush for hiding cover" would lead one to believe that elk only use sagebrush for calving. On the contrary, elk frequently as sagebrush to hide their young during the spring period while the cows are off foraging. This use of sagebrush (or other similar vegetation) as a cover source continues from the onset of the calving season through the spring and early summer period when elk often form in nursery groups. The DEIS recognizes sagebrush as being an important cover source

for mule deer and their fawns which is correct.

Alternative selection - We suggest that whatever alternative you ultimately choose, that it consider and incorporate the concerns addressed in this letter.

Available forage - In Chapter IV the DEIS derived an eventual forage availability figure for livestock based on 30,239 acres of primary range. It indicated that if no sagebrush burning takes place, that the available forage would decrease for livestock. It further indicated that when this decrease in forage happens, livestock would have to be reduced in order to retain 50% of the feed for big game. While there may be only 30,239 acres of primary livestock range, keep in mind there is a lot more range available for foraging, at least for wildlife: i.e., cover types in the West Fork/Antelope Basin (in acres) = 167 marsh; 1239 meadow; 1331 browse; 42,168 sagebrush/grassland; 11,321 grassland; 5,354 aspen; and 18,793 open canopy conifer (pg lll-10, DEIS).

This allegation that the eventual competition between livestock and wildlife will be the cause of cattle reductions, is perhaps the most seriously flawed section of the DEIS. It states "The net result (of the no action alternative) would be a need to reduce livestock AUM's to maintain the current levels of forage for big game" (pg 11-14, DEIS). This type of statement causes friction between the Forest Service, ranchers, sportsmen and MDFWP. big game do compete to various degrees with livestock for some forage species, it is incorrect to claim that forage competition is significant enough on the Gravelly summer range to limit livestock numbers. There have been no livestock reductions made in the Beaverhead National Forest because of concerns of livestock competition with wildlife according to Dan Pence, U.S. Forest Service Range & Wildlife staff officer of the Beaverhead National Forest. All of the livestock adjustments have been made to balance livestock numbers with range capabilities.

The most important aspect of rangeland resource management is achieved through proper grazing management, and not manipulation projects like sagebrush burning. While we question the broad scale need to manipulate sagebrush habitats, we do recognize your multiple use goal directive. Further, our department recognizes the place of livestock grazing on public lands and that when properly administered, this use is compatable with wildlife.

Thank you again for the opportunity to comment.

Sincerely,

Boll

Robert R. Martinka

Region Three Supervisor

Attached: Jorgenson, H. 1990

ADDITIONAL SOURCES:

- Anderson, J.E., and K.E. Holte 1981. Vegetation development over 25 years without grazing on sagebrush-dominated rangelands in southeastern Idaho. J. Range Mange. 34:25-29.
- Brown, J.C., R.A. Evans, and J.A. young 1985. Effects of sage brush control methods and seeding on runoff and erosion. J. Range Management 38:195-199.
- Hironaka, M.M., M. Fosberg and A. Winward 1983. Sagebrush-grass habitat types of southern Idaho. Bulletin 35. FWR Exp. Sta., Univ. of Idaho, Moscow, Idaho 41p.
- Jorgenson, H. 1990. Big Sagebrush and Fire in the Intermountain West. Unpublish. Literature Review. 119 references. Mont. Dept. Fish, Wildlife and Parks.
- Kay, C.E. 1990. Yellowstone's Northern Elk Herd: A Critical Evaluation of the "Natural Regulation" Paradigm. Doctor of Philosophy Dissertation. Utah State University. Logan, Ut.
- Mueggler, W.F. and Stewart, W. L. 1980. Grassland and shrubland habitat types of western Montana. USDA F.S. Technical Report Int-66. Intermountain Forest and Range Experiment Station. Forest Service, U.S. Dept. of Agri.
- Odum, E.P. 1959. Fundamentals of Ecology. Book. W.B. Saunders Comp., Philadelphia and London. Pages 257 and 266.
- Odum, E.P. 1971. Fundamentals of Ecology. Book. W.B. Saunders Comp. 3rd Addition., Philadelphia and London. Page 150.
- Robertson, J.H. 1971. Changes on a sagebrush-grass range in Nevada ungrazed for 30 Years. J. Range Manage. 24:397-400.
- Salih, M.S.A., F.K. Taha, and G.F. Payne 1973. Water repellency of soils under sagebrush. J. Range Management. 26:330-331.
- Walmbolt, C.L. & Paine, G.F. 1986. An 18-Year Comparison of Control methods for Wyoming Big Sagebrush in Southwestern Montana. Jour. of Range. Manage. Vol. 39. pg 314-319.

Response Summary

Robert Martinka, Montana Dept of Fish, Wildlife, and Parks, April 26, 1991.

- 1. The document does not say sagebrush burning generally is beneficial to wildlife. The document does however describe responses of certain community dependent species as a result of burning and specific predicted responses to selected species. Positive and negative effects are displayed. Reference: Chapter II, Comparison of Alternatives; and Chapter IV, Environmental Consequences.
- 2. The diversity issue is discussed from a landscape diversity standpoint. In other words diversity would be obtained by the presence of various successional stages of sagebrush stands over a large area and not just various stages within the same stand. This document does not say or infer that grasses and forbs would become nearly nonexistent or insignificant if no burns occur. Rather, the document states that there will be a reduction in forage production and a loss in availability. Reference: Chapter IV, Environmental Consequences, Vegetation and Landscape Diversity.
- 3. The Forest Service does not propose to eradicate big sagebrush. Reference: Chapter I, Purpose and Need. Chapter III, Vegetation, Existing Condition describes how research shows a large increase in grasses and forbs for the first 12 years.
- 4. Agreed. Mitigation measure has been added describing that prescribe burning will occur either in the fall after dormancy has begun or in the spring prior to greenup or with sufficient soil moisture to minimize the effect on Idaho fescue. Reference: Chapter II, Features Common to all Action Alternatives.
- 5. Big game will take advantage of the early greenup, more available forage, and the high palatability of the grasses and forbs. Reference: Chapter IV, Vegetation. The document does not state that big game need the additional forage resource, but it does state the deer and elk will be attracted to the burns and will benefit from the palatable grasses and forbs. Reference: Chapter IV, Direct and Indirect Effects, Big Game. The document does not state or imply that there is presently a shortage of forage for big game animals in the summer range of the Gravelly Mountains.
- 6. In dealing with benefits to sage grouse in the analysis area, it is important to keep perspective to the present population. In the past 8 years, only one sage grouse has been seen in the analysis area. Reference: Chapter III, Affected Environment, Wildlife, Sage Grouse. The document does state the difference in opinion between researchers concerning the benefits of fire to sage grouse. (Same Reference). The document did not project increases in grouse populations. The document did display the general habitat quality that would result. Reference: Chapter II, Comparison of Alternatives, Sage Grouse, and Table II-9; Chapter IV, Environmental Consequences, Sage Grouse.
- 7. Same as 2 above. The individual stand does become more diverse as it gets older though the entire stand becomes more homogeneous as all the stands mature. The document does not state a need to create edge effect, rather it shows a result of a mosaic pattern (in essence edge effect) from the burns. Reference: Chapter IV, Environmental Consequences, Non-Game and Small-Game Species.
- 8. The document does not imply that there would be an increase in antelope numbers as a result of the burning, nor that there is a need to burn specifically for antelope habitat improvement. Instead, the document describes the change in antelope habitat using the U.S. Fish and Wildlife Service

Habitat Suitability Model for antelope. Reference: Chapter II, Comparison of Alternatives, Antelope, and Table II-7; and Chapter IV, Environmental Consequences, Direct and Indirect Effects, Big Game. This model includes other variables besides sagebrush height and density. They include average distance to water, average slope, topographic diversity, forb canopy cover, diversity of forbs, livestock grazing impact. As we were primarily affecting the sagebrush component, and these other variables were beyond our control to change or would remain a constant, our modeling of antelope habitat centered on the sagebrush component.

- 9. Most of the aspen stands in the analysis area have been surveyed to determine why they are dying out. In most instances, there was no substantial or healthy regeneration. Reference: Chapter III, Vegetation, Existing Condition. Browsing of regeneration has not been determined as a major cause of the loss of aspen stands. Several exclosures are currently in place at this time in the analysis area. Since 1989, 165 acres of aspen have been cut down. All stands have responded to this treatment and only one stand shows excessive browsing. This stand was heavily browsed by cattle. Reference: Chapter III, Vegetation, Past Activities. Cliff Lake Natural Area has no cattle grazing yet exhibits the same lack of regeneration. Some browsing by wildlife is present, and is quite high in some stands. Based on these findings, it appears that the problem of no regeneration or no healthy regeneration is not the result of cattle browsing but is more likely to be due to the lack of a catastrophic event which would stimulate aspen regeneration. Reference: Aspen Background Document in project files for more detailed information. A mitigation measure has been added to further address this concern. Reference: Chapter II, Features Common to all Action Alternatives.
- 10. The attraction to burned areas by livestock is frequently mentioned in the literature but we have found no specific research documenting this trend. Personal observations on past burns in the Antelope Basin/West Fork area have shown some preference toward these areas by livestock. Whether the preference was significant was not measured. Whatever the reason for the attraction, be it the increased succulence, availability, palatability or nutrient level of the forage, good range management practices and livestock control are the key to proper management of the range resource. The purpose of the proposed burning program is not to manage use in riparian areas, although a positive effect is anticipated. Reference: Chapter I, Purpose and Need; Chapter IV, Livestock, Effects Common to all Action Alternatives.
- 11. Riparian management has been considered during the development and implementation of various allotment management plans. These techniques will not be considered in this EIS as they are beyond the scope of this document.
- 12. We agree that the conversion of aspen to conifer or the encroachment of conifer into the sagebrush would improve cover and would be a benefit to big game. Many of the areas where this is occurring have less than ideal amounts of hiding cover. The incidental amounts of Doug-fir treated in conjunction with the sagebrush burns were not considered as significant losses of hiding cover. We also felt it was very important to maintain aspen as a part of the system reverse the trend of aspen die out being experienced. Reference: Chapter I, Purpose and Need; and Chapter III, Vegetation, Existing Condition. Our proposals are also consistent with Forest Plan and Management Area Goals, Objectives, and Standards. Reference: Chapter III, Forest Plan Management Direction.
- 13. Additional analysis has been completed to address this concern. Reference: Chapter IV, Vegetation, Effects Common to all Action Alternatives.

Gravelly Sagebrush FEIS

- 14. Reference: Chapter III, Affected Environment, Soils and Geology; and Chapter IV, Watershed.
- 15. Prescriptions have been developed to minimize the effect on grass and forb species. Reference: Chapter II, Features Common to all Action Alternatives. Prescriptions are such that the risk of escaped fire is minimal.
- 16. The comments from State Biologist Bob Brannon were received too late to be incorporated in the Draft EIS. They are included in the final, and his comments and map are in the project file. Reference: Chapter II, Features Common to all Action Alternatives.
- 17. On all burn units, a minimum of 40% of the sage would be left unburned. This would provide an excellent seed source for reestablishment of young sagebrush in all units. Additional mitigation measures have also been incorporated. Reference: Chapter II, Features Common to all Action Alternatives; and Chapter IV, Vegetation, Effects Common to all Action Alternatives.
- 18. Comment noted. This suggests that sagebrush probably is not a limiting factor on the elk population in the Gravellys.
- 19. This is correct. Succession is continuing however and projections indicate an associated reduction in forage. Reference: Chapter III, Vegetation; and Chapter IV, Vegetation Effects.
- 20. This comment is taken out of context. The citation is in relation to overall landscape diversity within the 161,170 acre study area. Our analysis in this document is related to the diversity that will be established within the sagebrush component of the landscape and how it relates to overall landscape diversity. Reference: Chapter III, Vegetation and Landscape Diversity; and Chapter IV, Vegetation and Landscape Diversity.
- 21. The document acknowledges the use by cow elk for calving. Reference: Chapter III, Affected Environment, Wildlife; and Chapter IV, Environmental Consequences, Alternative 2, Elk. The Forest Service feels however that the elk use sagebrush during calving similar to the analogy in the letter with the bale of hay. The elk does not "need" the sage in order to calve or hide a calf but will use it if available. If the elk truly need sage in order to calve, one would have expected to have seen a sudden decrease after the spray projects of the 1960's and 1970's. The fact that a population decrease did not occur indicates that either: 1) No change in any critical factor occurred or 2) some other event was able to compensate for the vegetation change. The Forest Service is not aware of any other major changes in vegetation either on the forest or adjacent lands which might have mitigated any adverse effects by the spraying. Nor does the Forest Service know of any significant change in management which might compensate for any adverse effect to elk by the spraying. Based on this reasoning, the Forest Service does not feel the spraying adversely effected the elk and that the subsequent temporary loss of sagebrush has no substantive impact on elk calving.

The areas mentioned in the document as potentially impacting elk calving are the areas identified by Bob Brannon, State Wildlife Biologist. Elk calving locations as given by state researchers do not support these areas as being especially important nor do elk calf sightings by forest personnel correlate with these areas. The Forest Service has agreed however to consider these areas as important elk calving habitat for the purposes of this analysis. The ratio of burned to unburned area in units within calving areas has been modified. Reference: Chapter II, Features Common to all Action Alternatives.

- 22. Noted. Reference: Chapter IV, Environmental Consequences, Alternative 2, Elk.
- 23. Comment noted.
- 24. Elk consume a significant portion of the forage in the analysis area. It must be considered in any forage allocation determination for livestock in order to make a well informed decision. While there is no conflict with cattle at this time, without some burning, the analysis indicates a reduction in available forage in the years to come. As a result, there will be a need in the future to consider elk use and livestock use when forage is allocated in the AMP process. Reference: Chapter I, Purpose and Need; Chapter III, Affected Environment, Vegetation; Chapter IV, Environmental Consequences, Livestock Management.
- 25. Agreed. It is also important to acknowledge that vegetative manipulation is a recognized range improvement technique advocated by most range experts. Hormay recommends managing the range for a few years to determine the exact need for the treatment and then treat the acres required (Hormay 1970). This is what the Forest Service is striving to accomplish with this proposal. It was also our objective to be responsive to earlier Department and other groups concerns that we take a broad scale look at sage brush burning programs rather than a piecemeal, unit by unit approach.

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April 26, 1991

Mark Petroni, District Ranger Madison Ranger District 5 Forest Service Road Ennis, Mt. 59729

Concerning Sagebrush Burn, West Fork & Antelope Basin
Dear Mark:

Your seminar in Butte the past evening was very educational as well as interesting. We especially appreciated your viewpoint on how the private land in the valley has such an impact on the varying aspects of the public lands at the higher elevations.

Concerning your proposed Sagebrush burn we are strongly in favor of the burn. In our minds burning in the mozaic pattern that you have described is a good plan that will not only have a progressive effect on the wildlife in the area but will also be very advantagious to livestock grazing.

In closing, through our own experience, plus an observation from others, sagebrush burning is a very important range management tool.

MADISON RD

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Sincerely yours,

Russ Schulz

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Gravelly Sagebrush FEIS

Chapter V

Response Summary

Russ Schulz, Schulz Brothers Ranch, April 26, 1991.

Comments were of a general nature. No questions, new issuesor information, or additional analysis needs were identified. The comments will be considered in preparing the Record of Decision.



Mark Petroni, District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

April 26, 1991

Dear Mark:

Thank you for the opportunity to comment on the Gravelly Sagebrush DEIS. The following are the issues and concerns that we feel should be addressed more thoroughly in the FEIS.

We look forward to further participation in the planning process.

Sincerely,

for Sara J. Johnson

MADISON RD

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I. The DEIS is both vague and quite misleading regarding the reasons for initiating the prescribed burning of sagebrush.

The DEIS states that the proposed action is needed to increase forage for big game and to create a diversity of canopy coverages of sagebrush.

A. Increasing Forage for Big Game

Nowhere in the document is any discussion provided on (2) how the Forest has determined that forage is currently limiting to big game species in the area, (5) how much additional forage is needed to make up for this deficit, (4) if forage is currently limiting, how much of this problem can be attributed to livestock grazing, or (5) how the increases in forage will be allotted between cattle and big game.

If a forage problem has not been documented, we believe there is no justification for spending funds to increase it, especially when significant habitat degradation will result to many sensitive wildlife species. The FEIS must provide adequate documentation to show that forage for big game species indeed needs to be increased, so that the proposed action actually represents a benefit for them.

We would also like to see a discussion on why, if forage is currently believed to be limiting for big game species, reductions in the current levels of livestock grazing was not considered as a possible management action?

And finally, we believe the FEIS must provide a better description of how the Forest will ensure that big game will actually have access to more forage following the burning program. The DEIS stated that cattle numbers would not be increased along with the forage, so that some additional forage will be left to big game. On the other hand, the DEIS implies that a major reason for the burns are because forage for cattle is becoming limiting, and that to even maintain current stocking levels, forage increases are necessary. Thus the DEIS is very contradictory in this regard. We would suggest that no actual increases in forage are guaranteed for big game. This would only occur with a reduction in utilization levels, which do not appear to be planned.

B. Creating a Variety of Sagebrush Canopy Coverages

The DEIS also implies that the proposed action is needed to maintain a variety of canopy covers of sagebrush for wildlife (dense stands of sagebrush will be patchily burned to remove about half of the total sagebrush plants). This statement was extremely vague, and we believe that much more clarification is needed. First, we are confused as to why the existing landscape is not already providing a relatively diverse array of sagebrush canopy coverages, both from a local and a landscape perspective. As the maps indicate, much of the sagebrush proposed for burning represents a narrow belt of habitat traversing the area. On this level of the landscape, a diverse canopy coverage of sagebrush already exists. And within sagebrush habitats, there is generally quite a mosaic of structures,

depending on soil depth and type, moisture levels, slope, exposure, elevation, etc. So what we assume the Forest is implying is that the existing stands of sagebrush need to be opened up, and their total stand size reduced. Although a large number of environmental impacts to shrubland species will likely result from a reduction in stand size and an increase in edge habitat (increased predation, increased brood parasitism by brown-headed cowbirds, increased exposure to weather extremes and heat stress, reduced post-fledging cover for juveniles, decreased number of breeding pairs due to habitat reduction, and increased displacement and competition by edge and open habitat species, decreased abundance of invertebrates associated with sagebrush), very few of them can be considered a benefit to sensitive shrubland species. Thus, the FEIS must provide a minimum of research/literature documentation as to why the proposed action represents a benefit to wildlife. Given that adverse impacts will occur, a proposed need for action should include a justification for the associated costs to nonbenefited species of wildlife.

II. The cause of the habitat problem to wildlife, or what has been implied to as unnaturally dense stands of sagebrush, was never discussed within the DEIS.

We believe it is highly inappropriate to propose a cure for a problem when the causes of such are never discussed. We believe that the FEIS must provide a full disclosure of what has caused the development of unnaturally dense stands of sagebrush in the area. We have a major concern that if unnatural stands of sagebrush have been created by excessive livestock grazing (reduced competition of grasses and forbs due to grazing), this needs to be displayed. Burning of sagebrush stands will only be a temporary fix, since past herbicidal treatment and burning of sagebrush has not corrected the problem. We question why the DEIS has not proposed a reduction in utilization levels in order to produce a more natural ecosystem, rather than continuing past strategies which both do not work and which carry a significant cost to wildlife. What the proposed cure amounts to is destroying habitat in order to save it!

II. The scope of the wildlife analysis within the DEIS was much too limited to meet the full disclosure requirements of NEPA.

We agree, as stated in the DEIS, that grassland songbirds will be benefited by sagebrush removal while shrub-associated songbirds will be negatively impacted. However, the significance of sacrificing shrubland habitat to benefit grassland species was not discussed within the DEIS. As such, the erall impact of the proposed action was not adequately disclosed. Grassland species in Montana are in no danger of reduced population viability, and are not in need of management at this time. First, their breeding habitat in

Montana is not considered to be limiting on a landscape perspective. Secondly, losses of grassland habitat, due to cultivation, have been partially balanced out by conversions of brushlands to grasslands to benefit livestock. Also, many grassland areas are too dry to have warranted conversion into croplands. And third, many grassland species can tolerate a moderate density of sagebrush within their habitat, so that they can breed within some brushland habitats.

On the other hand, many brushland species in Montana have quite restricted distributions, even within sagebrush habitats. Their overall population viability may depend on high reproductive success within localized areas of high quality habitat. Within certain sagebrush areas, the density of shrubland breeding birds can be extremely high, while it will be very low in other areas. They thus can be considered sensitive species which are quite vulnerable to habitat modification, particularly if 'source areas', or those habitats that produce a surplus of individuals, are removed. Overall, because they have a more restricted distribution, shrubland species should be considered more sensitive than grassland species. In addition, their habitat has been more severely impacted than grassland species. Sagebrush has been aggressively removed from both public and private lands for many years, largely in an effort to increase livestock forage. Cultivation, or 'sod-busting,' has also been an important loss factor in the more productive, fertile valley bottoms. Thus the habitat base for shrubland species have been significantly reduced over historic levels. And in many cases, the better shrubland habitats have been the ones that have been removed. In prescribed burning, it is both easier to burn the more dense, productive sagebrush stands, and greater forage increases are expected when the more productive sagebrush areas are burned. And in cultivation, again the bottomland, more productive sagebrush habitats are those that generally are converted to crops. Thus, a simple tally of acres of habitat lost would not represent the whole picture.

In addition to the total loss of habitat, shrubland species habitat that remains is likely, in many cases, significantly degraded due to habitat fragmentation, small patch size, low vigor of shurbs due to trampling by livestock, and poor range condition of the associated forb-grass community due to many years of excessive grazing pressure.

All of the above habitat factors have cumulatively resulted in significant habitat losses or degradations for shrubland species. The sensitivity of these species was not addressed in the DEIS. Nor was any attempt made to assess the relative trade-off values for increasing habitat for grassland species while degrading habitat for shrubland species. An uninformed public might simply assume that this represents an equal tradeoff, when in fact, it does not. To meet the full disclosure requirements of NEPA, this issue needs much further discussion and clarification within the DEIS.

We believe it is necessary that the EIS provide some level of cumulative analysis regarding the historic acreages of sagebrush over the entire landscape (including private as well as public lands), how this compares to current distribution, and what the likely impact is to those species that are sensitive to losses of shrubland. Then we believe it is critical to include a discussion, from a conservation biology perspective, of what the long term population viability of sensitive shrubland species is, and how this will be impacted by sagebrush control programs on public lands. Within this discussion, we would like to see more information provided on the implication offered in the DEIS that loss of sagebrush habitat on private lands has reduced sage grouse winter range, and is possibly a limiting factor on the local population. This represents a good example of our concerns.

III. The DEIS does not point out that the posed action represents a significant change over natural conditions.

We are not familiar with the average stand age of sagebrush in the project area, but it is considerably older than 20 years. What will the ecological impact be of this 'shortened rotation age' for 72% of all the sagebrush that exists in the project area? Since older, mature stands of sagebrush are by far the most productive as per wildlife values, the conversion of most of the sagebrush to the immature, less productive age classes will surely impact a wide range of wildlife. This needs to be fully disclosed in the FEIS. What will the expected carrying capacity of shrubland species be, with the proposed habitat modifications, as compared to historic levels? This type of information is necessary to meet the full disclosure requirements of NEPA.

IV. The DEIS generally ignores potential project impacts to small mammal species.

However, these species comprise a significant prey resource for a wide variety of predators. The reduction and elimination of sagebrush will reduce habitat diversity for small mammals, and reduce the density of some species. Those species impacted either directly or indirectly by reductions in small mammal species must be fully addressed in the FEIS.

V. While the DEIS alluded to the value of sagebrush as wintering habitat for sage grouse, no other wildlife winter habitat associations to sagebrush were discussed.

Although the brushland species of songbirds that nest in the sagebrush migrate south in the winters, other species that breed further north, such as redpolls, migrate south into Montana in the winter and feed extensively on sagebrush seeds. We believe the FEIS

must discuss the overall, cumulative impacts in the reduction of winter habitat for all species that depend on sagebrush as winter habitat, not just sage grouse.

VI. The impacts of sagebrush reduction of Spig game were not fully displayed, again as required by NEPA.

The value of sagebrush as per fall/winter/spring habitat for elk, mule deer and antelope was not discussed. The DEIS implies that since no 'key' big game winter ranges exist within the proposed burn areas, no impacts on winter habitat use will occur. We are not aware of any current concepts in wildlife habitat management that indicate that only a limited number of 'key' habitats need to be protected to maintain wildlife populations. Most wildlife, including big game, depend on a wide variety of habitats for their overall survival, not just those habitats they are forced to during periods of severe environmental stress, or 'key' winter ranges. Even the location of these areas will vary from year to year, depending on winter precipitation. Most elk and deer prefer to winter as high as possible, and will thus use higher elevation habitats during low-snow years. The project area surely provides winter range for big game during some winters. And during all years, the quality of their entire fall/winter/spring habitat will be important. The FEIS must display that reduction of sagebrush on big game fall-winter-spring habitat represents habitat degradation. At a minimum, a forage resource (sagebrush) will be reduced. Indirectly, other forage resources that are normally available at the base of sagebrush plants in the winter will become unavailable. Some measure of expected reductions in big game forage resources from fall through spring need to be quantified in the FEIS.

The value of sagebrush as hiding cover for these species was only discussed for elk. The DEIS implied that a reduction of hiding cover for elk calves is not a concern because elk populations are at State objectives, and because no predation problems have been identified in the project area. No references were provided as per predation problems. What studies have currently been done to show that calf predation is low? And regardless of whether or not the Forest Service is concerned with reductions of elk calf survival on calving grounds, the expected impacts need to be displayed. We believe the FEIS needs to quantitatively display the expected level of cover reduction within the sagebrush habitat, and what the projected increases of elk calf vulnerability will be. Since future occupancy of this habitat by the gray wolf is a likely possibility, this added habitat feature should also be discussed in elk calf vulnerability and overall productivity of the elk herd.

We would also like to suggest that the tone of the DEIS be altered to indicate that management of elk calving grounds is important, regardless of the current status of the herd. We should not have to wait until a species or herd is having problems before habitat management becomes a priority.

The DEIS indicated that as per a habitat model, burning will improve habitat for the antelope. We don't believe it is appropriate to base environmental conclusions on models, since these are only a tool to indicate if potential problems may arise. And if models are used, they must be accompanied with adequate validation. We would like to be assured that this model has been adequately validated in this geographical area; the EIS should provide this information. It also needs to show exactly how the local habitat and population data was used in the model. Models are replete with problems, and the reader should have the necessary information to assess the application of any given model to situation at hand. And finally, the actual reasons why burning will improve habitat for antelope needs to be provided. What current problem exists that will be corrected by burning? For example, is there a documented shortage of forage in the project area? If so, what plant species need to be increased, and how will this be accomplished by burning? Are there other options for correcting existing habitat problems? What impact will the proposed reductions of sagebrush, a key plant for antelope, have on both their year-round diet and fawn vulnerability?

Since the Montana Department of Fish Wildlife and Parks is extensively involved in management of big game species, we would like to see what coordination measures have been done regarding implementation of the proposed project.

VI. The DEIS implies that the proposed habitat modification will benefit sage grouse. It was never clarified as to exactly why this will be (this may be because of the limited amount of information provided in the summary document; the substantiating information may be provided in the complete document). The DEIS suggested that brood habitat, including riparian areas, are currently limiting, as well as is winter habitat on private lands. No discussion was provided on how brood habitat will be improved with the proposed treatment. If sagebrush reduction will improve brood-rearing habitat, why is it currently limiting when so much past sagebrush control has already occurred? What will the proposed control program do that past programs have not done? Since population data is generally available for this hunted species, how do population changes over the years relate to past sagebrush control? We would also like to see a discussion provided on the estimated impacts of livestock grazing on sage grouse. Survival of young is certainly tied to protective cover from predators, and cover is reduced by both grazing and sagebrush control. Most game birds are highly sensitive to cover levels. With the combined reduction of sagebrush through burning, plus grazing, the overall cover levels of a large portion of the area will be reduced. Yet the DEIS as provided no discussion on the potential impacts of this factor.

We would also like to see the FEIS include a discussion of coordination measures that have been developed between from Forest Service and the MDFWP regarding management of grouse within the project area.

VII. The proposed actions have a high potential to impact the reproductive success of the ferruginous hawk, a species which has suffered documented population declines and habitat losses throughout its western range.

The species' sensitivity is attested to by the fact that it (1) has been added to the Blue List, (2) is currently being considered as listing as a threatened species under the Endangered Species Act in the southwestern U.S., (3) is listed as a candidate species by the U.S. Fish and Wildlife Service in Montana, and (4) is currently listed as a species of special interest and concern in the state of Montana. Yet in the project area, no nesting surveys have been done, nor are planned before the extensive prescribed burning program will be implemented. The only mitigation measure that will be implemented for this species is the maintenance of a 300m buffer strip around a nest (if by chance it is located) to prevent disturbances during the nesting season. No documentation was provided on why a 300m buffer strip was selected. White and Thurow (1985) are the only source we are aware of that actually did controlled disturbance research on ferruginous hawks during the nesting season, and they recommended that at least a 440m buffer be provided around nests. However, this buffer was based on adequate prey densities, since birds will be more sensitive during low food years, and more importantly, this buffer zone was based on the type of disturbances they created, or simply flushing the birds from their nest, then leaving the area immediately. This will not be the type of disturbances provided during the prescribed burning programs. Activity will continue for long periods of time over a severalday period, both to prepare fire lines and then to complete the burn. We would suggest that a buffer zone of much greater than 440m will be required under such intensive disturbance regimes.

The impact of even light disturbances was found to be very significant. White and Thurow (1985) found that 33% of the disturbed nests were deserted, and of those disturbed nests that were successful, significantly fewer young fledged than from undisturbed nests; the following year, only 52% of those disturbed sites were reoccupied, while 93% of the undisturbed sights were reoccupied.

Without location of nests and provision of adequate buffers to prevent desertion of the site, or impairment of overall reproductive success, there is a high potential to impact this sensitive species through implementation of the proposed project. This should be clearly stated in the EIS. Given that management of sensitive species on public lands

should be a priority, we believe that the Forest needs to inventory these areas for nests, and then to design a habitat management that will ensure continued existence of this species in the project area.

The DEIS was also vague about what the expected impacts on sagebrush control will be to the dominant prey species of the ferruginous hawk, or the jackrabbit. What studies have been done in this or similar localities that can reasonably predict how the reduction of sagebrush will impact the jackrabbit? Since sagebrush control has been an ongoing program with the Forest Service for many years, what type of monitoring data has been collected by the agency to date? Once again, impacts to sensitive wildlife species need to be clearly evaluated. Reduction of the prey base can have significant impacts, and should be carefully looked at. As has been pointed out by Westoby (1980), the impacts of habitat modification can be extremely subtle; he observed that the loss of halogeton and greasewood from jackrabbit habitat eliminated a mid-summer water source, since no other plants contained the necessary water content to meet the rabbit's needs, and thus eliminated rabbits from the area.

VIII. The DEIS has proposed correcting a habitat problem with aspen stands without discussing what has caused the existing problem. We believe it is essential that the past and ongoing impacts that livestock grazing have on aspen stands be clearly disclosed. What monitoring has the Forest done to assess fivestock damage to these stands. We believe that on livestock allotments, a considerable portion of aspen decadence can be attributed to livestock damage. Since aspen generally occur in areas where subsurface water flows are high, they also tend to have a lush understory. This, along with the shade the trees provide, result in excessive use by cattle. In addition to damaging the existing trees through rubbing and soil compaction, cattle will trample and browse most or all of the sprouts. They thus not only hasten the demise of the existing stand, but they prevent any replacement.

We believe that it is essential that the EIS clearly document what degree of livestock damage is presently occurring to aspen stands. It also must discuss how newly regenerated aspen stands will not suffer the same fate, or be totally trampled/consumed by cattle. No information was provided on how these burned stands will be protected from livestock until the stand is reestablished in 10 to 20 years. Will they be fenced, and if so, for how long? If they aren't fenced, how will the Forest ensure that the proposed project will not simply hasten the demise of these valuable stands?

IX. The DEIS never clarified how long the burned areas will be protected from livestock grazing. How much time will be provided below recovery of the burned areas before they are opened to further livestock use?

X. Overall, we have a major concern that the Forest feels it is acceptable to alter the natural characteristics of these sagebrush habitats, to the detriment of wildlife, in order to enhance livestock production. We believe it would be much more appropriate to simply adjust livestock carrying capacity to the capabilities of the land. If not, the Forest should clearly disclose the tradeoffs that are being made, rather than impling what is good for livestock is also good for wildlife. This is clearly not the case. We would also like to see the FEIS include some justification as to why wildlife habitat is being reduced to benefit livestock. What benefit does this action provide to the public?

LITERATURE CITED

White, C. and T. Thurow. 1985. Reproduction of Ferruginous Hawks exposed to controlled disturbance. The Condor 87:14-22.

Westoby, M. 1980. Black-tailed jackrabbit diets in Curlew Valley, northern Utah. J. Wildl. Manage. 44:942-948.

Response Summary

Sara J. Johnson, American Wildlands, April 26, 1991.

Reviewed Summary Document.

- 1. Reference: Chapter I, Purpose and Need.
- 2. Forage is not currently limiting to big game in this area. Reference: Chapter I, Purpose and Need.
- 3. Forage is not limiting but may become limiting as forage production is reduced over time. Reference: Chapter I, Purpose and Need; and Chapter IV, Environmental Consequences, Livestock Management.
- 4. Forage is not currently limiting. Same response as 2 and 3 above.
- 5. Reference: Chapter II, Table II-5; and Chapter IV, Environmental Consequences, Livestock Management.
- 6. The Biological Assessment (Appendix B) determined that the affects on sensitive species are insignificant and discountable and are not likely to affect these species. The U.S. Fish and Wildlife Service concurred with this opinion. Reference: Chapter V, U.S. Fish and Wildlife Service letter.
- 7. Again, forage is currently not limiting for big game. The scope of this analysis is not to analyze livestock grazing plans. These plans are reviewed and rewritten periodically under the NEPA process. Alternative 1 does show a need for livestock reduction if this alternative is implemented. Reference: Reference: Chapter III, Affected Environment, Wildlife, Elk; and Chapter IV, Environmental Consequences, Livestock Management.
- 8. It is the intention of the Forest Service to provide a level of forage for big game. Sequence of livestock use by pastures is not anticipated to change in any way from current schedule. Surplus forage will be available for big game. Reference: Chapter IV, Environmental Consequences, Livestock Management. Also reference: Chapter III, Forest Plan Management Direction.
- 9. Reference: Chapter III, Forest Plan Management Direction; and Affected Environment, Landscape Diversity and Vegetation. The proposed action would provide a variety of successional stages, closely matching what would be found if a wildfire occurred in the area. There will indeed be a reduction in contiguous stand size and an increase in edge habitat which may not be a benefit to all shrubland species. Reference: Chapter IV, Environmental Consequences, Wildlife.
- 10. Document did not state that stands are unnaturally dense nor that a wildlife habitat problem currently existed. Reference: Chapter I, Purpose and Need; and Chapter III, Affected Environment, Wildlife and Vegetation.
- 11. Same response as 10 above.
- 12. Document did not state nor imply sagebrush stands were result of grazing. The sagebrush stands are natural on those habitat types.

- 13. An alternative which would produce a more natural ecosystem was considered but not given detailed study. Reference: Chapter II, Alternatives Considered but Not Given Detailed Study. An alternative with a reduction in livestock is contrary to Forest Plan and Management Area goals and objectives and is also beyond the scope of this document. Reference: Chapter I, Purpose and Need; and Chapter III, Forest Plan Management Direction.
- 14. The cumulative impacts were analyzed for sagebrush and grassland species using the entire analysis area as the boundary. Reference: Chapter IV, Environmental Consequences, Wildlife. Much of this comment is based on the status of sagebrush on a statewide basis or larger, a base which is much too broad and encompassing to be of much value. Of importance regarding this comment is to keep in mind that no cultivation or sod-busting is contemplated. The sage is not being "aggressively removed". Rather, the sagebrush stands are being set back in succession and will quickly return to sagebrush as has been demonstrated in past burns. Reference: Chapter II, Figures II-1, II-2, II-3, and II-4; and Chapter IV, Figures IV-1, IV-2, IV-3, IV-4, and IV-5.

The impacts of burning on wildlife is not something unnatural or new to the ecosystem. Since the retreat of Pleistocene about 10,000 years ago, disturbances such as fire have continually altered the distribution and abundance of mature sagebrush and associated wildlife and plant species in this analysis area. Reference: Chapter III, Affected Environment, Vegetation. Such habitat diversity fluctuations with resulting fragmentation and patch size or mosaic is a natural event in a habitat where fire is a regular occurrence. While the intent of this project is not to necessarily emulate nature in every way, it is the intention to maintain a diversity of habitats similar to the natural condition. If this results in a reduction in habitat for some species and an increase in others, then those are the consequences that are displayed. We have not made any judgement as to whether the change is good or bad but have simply disclosed what those changes will be. Reference: Chapter II, Comparison of Alternatives; and Chapter IV, Environmental Consequences.

- 15. Cumulative impacts were addressed. Reference: Chapter IV, Environmental Consequences. The current and future distribution of sagebrush was also discussed. Reference: Chapter II, Figures II-1 thru II-4; Chapter III, Affected Environment, Vegetation; and Chapter IV, Environmental Consequences, Figures IV-1 thru IV-5. As can be seen by figures mentioned above, mature sagebrush will increase in all alternatives by the end of 30 years. For species requiring mature sagebrush, all alternatives will provide for more habitat. Therefore, population viability for mature sagebrush dependent species will be increased over time for all alternatives. It is a matter of degrees. The No action alternative will by far and away provide the most mature sage.
- 16. The proposed action is not a significant change over natural conditions. Natural fire frequency is similar to proposed fire levels in alternatives 3 and 4. Reference: Chapter III, Affected Environment, Vegetation. Because the proposed burn rotation (30 years) is similar to the natural fire frequency, there is not a "shortened rotation age" and the ecological impact would be very similar to the natural impact of wildfire. Carrying capacity of all species will not be appreciably different from what a natural regime would be.
- 17. We are proposing to manage the successional stages of sagebrush, not eliminate it. Sagebrush will return to the treated areas. Same response as 14, 15, and 16 above.
- 18. One of the reasons why sage grouse do not winter in the area may be because in a normal winter nearly all sagebrush are under the snow. Sagebrush in this area has little significance for birds depending on sagebrush during the winter. The importance of sage in the winter for wildlife is more related to the needs of small mammals that spend the winter under the snow. Regardless of this, over time there will be more tall mature sagebrush than exists at present time for all alternatives.

- Reference: Chapter III, Description of Affected Environment, Sage Grouse; Chapter IV, Figures IV-1 thru IV-5; and Chapter IV, Landscape Diversity.
- 19. Reference: Chapter III, Affected Environment, Wildlife; and Chapter IV, Environmental Consequences, Wildlife. Disclosure of effects on big game is a major component of this analysis. The lowest elevations of the area provide marginal winter range in the most open of winters for elk but otherwise cannot be considered winter range. The increase in forage produced through burning will actually improve winter range for elk and not a reduction as stated in this comment.
- 20. The value of sagebrush as hiding cover for mule deer and antelope was also discussed. Reference: Chapter IV, Environmental Consequences, Wildlife. Elk predation was also discussed. Gravelly Snowcrest Elk Study (1990 Progress Report) reviewed 71 radio equipped elk calves and found only 2 dying by predation. Reference: Chapter III, Affected Environment, Elk.
- 21. The effects on elk calving were discussed. Reference: Chapter IV, Environmental Consequences, Wildlife.
- 22. The U.S. Fish and Wildlife Service Antelope Habitat Suitability Model was the best tool we had available. With this model we predicted changes in habitat quality but did not make any projections on populations. Reference: Chapter III, Affected Environment, Wildlife; and Chapter IV, Environmental Consequences, Wildlife.
- 23. Documentation of all reviews, meetings, and coordination with the Department are included in this chapter, in Chapter II, Scoping and Public Involvement, and in the project file.
- 24. Reference: Chapter III, Affected Environment, Wildlife; and Chapter IV, Environmental Consequences, Wildlife.
- 25. Only 1 (one) sage grouse has been seen in the past 8 years. The impacts to sage grouse habitat were discussed at length. Reference: Chapter II, Comparison of Alternatives, and Table II-9; Chapter III, Affected Environment, Wildlife; and Chapter IV, Environmental Consequences, Wildlife.
- 26. Same response as 23 above.
- 27. The Wildlife Biologist has made 26 field trips to the analysis area and has not found any ferruginous hawk nests. While birds are occasionally seen, ferruginous hawks do not appear to be resident in much of the analysis area. The Landon Ridge/Patchtop Mountain area is where most of the sightings occur and could represent nesting activity. A 300 yard buffer around nest sites is recommended by Olendorff 1973 and Snow 1974 (See Literature Cited). Your reference is more timely and based on research which better fits this project. Another reference (Stahlmaster 1988) generally supports this distance. Based on these documents, the mitigation measure of 440 meters buffer will be used. The mitigation measure of a 40-60% burned/unburned mosaic in the units in the upper reaches of the West Fork Madison will still be in place. Reference: Chapter II, Features Common to all Action Alternatives.
- 28. Reference: Chapter II, Features Common to all Action Alternatives. We have done no specific monitoring of prey base species for ferruninous hawk. The mitigation measures will insure an adequate prey base.
- 29. Reference: Chapter III, Affected Environment, Vegetation. Also, refer to Aspen Background Document in project file. Livestock grazing or grazing by any other animal has not been a major impact on

the cause of the loss of aspen in the area. Surveys the past 2 summers indicate a lack of regeneration under many of the stands. The lack of fire is believed to be the cause of lack of aspen regeneration. A comparison of the stands in the analysis area with the aspen stands found in the Cliff Lake Natural Area (where no livestock grazing is allowed) found a similarity in respect to general health and a lack of regenerating capability. Stands which have been treated in the Antelope Basin area the past two years have all shown excellent regeneration with only one stand exhibiting significant livestock browsing. Permanent photo points and transects in addition to exclosures have been established to continue monitoring these stands.

- 30. Mitigation measures have been expanded to respond to this concern. Burn units will have at least one full season of growing season deferment after treatment. Reference: Chapter II, Features Common to all Action Alternatives.
- 31. The Forest Service does not feel that prescribed fire results in an unnatural condition. Reference: Chapter III, Affected Environment, Vegetation. A stated purpose is to maintain livestock capacity. Reference: Chapter I, Purpose and Need; and Chapter III, Forest Plan Management Direction.



United States Department of the Interior



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DENVER, COLORADO 80225-0007 MADISON RD April 26, 1991

ER 91/233

Mr. Mark Petroni District Ranger Madison Ranger District 5 Forest Service Road Ennis, Montana 59729

Dear Mr. Petroni:

APR 2 9 1991

INFO ACTION

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The Department of the Interior has reviewed the Draft Environmental Impact Statement (DEIS) for the Gravelly Sagebrush Burning Project, Beaverhead National Forest, Madison County, Montana. The DEIS generally provides a thorough review of the identified issues and how they would be affected or resolved by the alternatives. However, we think that further clarification is warranted on the following points.

<u>General</u>

The proposed action is to burn an average of 1,512 acres annually over a 5-year period. However, it is not clear how the proposed plan would be affected or adjusted if substantially more than 1,512 acres are burned in a year due to the escape of prescribed burns, or as a result of naturally occurring fires. It also is not clear how the plan will be adjusted if substantially less than 1,512 acres are burned in a year due to unsuitable burning conditions. The final EIS (FEIS) should address and clarify how the plan will be implemented relative to these points.

Identification of the dates for the normal spring and fall burning periods in the project area should be provided in the FEIS. Such information would make it easier to assess the likelihood of impacts to seasonal wildlife habitat and public use.

Wildlife Resources

The area south of Dillon and east of I-15 (Sweetwater Hills, Basin Creek, lower Centennial Valley) has been inventoried for breeding ferruginous hawks and has been found to support one of the denser nesting populations in the region. These birds show a strong affinity for selecting nest sites in sagebrush/grassland habitat types. More than 90 percent of 281 active nests were found on steep slopes, rock outcrops, and pinnacles. Only six tree nests were located, although additional suitable sites are

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readily available, and no nests were found in stream bottoms. There are also one to four alternate nests available within each territory. These alternate nest sites are used periodically as primary nests for breeding pairs.

Therefore, we suggest that an inventory be conducted for breeding territories, especially in the West Fork area, prior to any further burn planning and the results incorporated and analyzed in the FEIS. Such an inventory would provide habitat information essential to addressing cumulative impacts from future vegetation treatments on private, state, and other federal lands. Mitigation should be designed to protect ground nests, and mitigating buffers of at least 300 yards should surround all alternate nests.

Sage grouse are being used as an indicator species for sagebrush habitats, but it appears there is a lack of information on local population levels and seasonal habitat use by sage grouse in the proposed burn areas. The DEIS states that casual observations of sage grouse continue to be collected, but does not indicate if those observations would display concentrated use areas. This information should be included in the FEIS.

Considerable hunting of sage grouse occurs in the Landon Ridge/Patchtop area of the West Fork, and summer habitat is available throughout this area on BLM, state, and private lands. It is reasonable to assume that similar use occurs on adjacent forest lands. Sage grouse have been wintering in reduced numbers in the Sand Dunes area along the north boundary of Red Rock Lakes National Wildlife Refuge (NWR) 5 and along the Red Rock River below Brundage Bridge for several years. Considering the declining populations of sage grouse, it is important to protect and enhance suitable habitat on public lands wherever possible, particularly if major habitat losses are occurring elsewhere. The FEIS should identify existing habitat within the project area and the mitigation which will be employed to protect it.

We disagree that ". . . there are very limited riparian areas in Antelope Basin and West Fork which are important feeding sites . . ." (See page\III-7.) Wet meadows, intermittent and ephemeral drainages, as well as perennial water sources which could provide important foraging areas are present throughout the project area. The interspersion of upland habitat types and riparian areas and the availability of quality forage in those habitats is the key to summer brood-rearing use by sage grouse. The FEIS narrative should be changed to reflect these points.

The cumulative effect of sagebrush burning on lands within and adjacent to the project area has been underemphasized. For example, the Landon Ridge area has been regularly "retreated" by burning and spraying sagebrush for at least 30 years, and

Additional treatments can be anticipated in the next 5 years. However, there is no discussion on how that activity and the proposed action would cumulatively affect existing yearlong sage grouse use of the area. With the recognized migratory movements of sage grouse in the South Gravelly/Centennial area, grouse use of adjoining habitat and impacts occurring there should not be overlooked. Inventory work, as suggested above, is critical to determining how important habitat in the proposed burn areas may be to the local sage grouse population. The FEIS should present and analyze the implications of this cumulative effect.

Vegetation Resources

Throughout the DEIS, the tone of the discussion for burning sagebrush points toward managing vegetation to maintain a certain desired plant community and accommodating multiple uses. However, there is little discussion of how the 10 affected grazing allotments are currently managed and of how livestock will be managed to accomplish vegetation objectives. The FEIS should fully describe these issues.

Discussions of Alternatives 2 and 3 on pages IV-23 and IV-24 focus on forage production and AUMs available, and state that "forage produced in excess of that required for livestock will be available for big game and watershed values." With the large number of acres proposed for burning and the number of allotments involved, it will surely be necessary to adjust livestock use just to implement the burning schedule. How will livestock be managed to enhance the success of proposed burns, especially in aspen stands? What influence are livestock currently having on wildlife use, riparian habitat tondition, and watershed stability, and how will that influence change as a result of sagebrush and aspen burning? The Upper Ruby DEIS stated that the grazing permittee would be responsible for deferring use on burned areas (keeping livestock off the burns until recovery occurs). Is this also the case with the proposals in this document? The FEIS should clarify and describe the implications of these factors.

Monitoring of sagebrush and aspen treatment sites should include preburn canopy, age classes, and density estimates in order to accurately assess the effects of the burn. The DEIS does not indicate if this information is already available. It should be included in the FEIS. We suggest installing line-intercept transects to determine canopy coverage and percent composition prior to treatments and periodically thereafter.

Aspen management is a concern throughout southwestern Montana, and monitoring on BLM lands has shown a similar decline in overall health of many aspen stands. However, the DEIS implies that most of this decline stems from natural succession and lack

Mr. Mark Petroni

of natural fires. While these factors are certainly significant in the long term, other factors, including disease, insect infestations, drought, and livestock grazing are probably much more significant in the short term. Without having good information on what factors are causing aspen declines, burning could add to those losses. The FEIS analyses should recognize these other factors, address how they affect aspen declines, and consider how they may interact with the proposed burn project.

What has been the response of Aspen to the treatments applied since 1989 (page S-7), and how much regeneration has survived? A statement on page IV-12 indicates that most aspen stands would be burned only along the edges in conjunction with burning the adjoining sagebrush. However, thinning treatments of aspen clones have repeatedly shown that little new sprouting will occur due to the remaining apical dominance of mature trees. The FEIS should provide information and address this point.

Sprouting along a stand edge is also particularly vulnerable to livestock hedging. If aspen sprouting is stimulated after burning, livestock and big game concentrations can remove all regeneration in a very short timespan. The FEIS should specify what protection steps or changes in management will be implemented if post burn utilization is too high to allow aspen reestablishment.

Burning of sagebrush from natural and prescribed fire within 3-4 miles of the forest boundary in the project area has already affected the age structure and density of sagebrush stands. The potential for future burning or loss of sagebrush habitat through development should not be ignored on private lands north of Raynolds Pass or in the Centennial Valley. With proposed forest burn units located immediately edjacent to the forest boundary, the cumulative impacts of past and potential sagebrush treatments on adjoining lands should be considered and analyzed in the FEIS. If the graphs portraying acres of sagebrush by canopy classes in Figure IV-1 to IV-5 include only forest lands, they could be improved by adding bars to show sagebrush diversity for land of all ownership within the vicinity of the project area.

Sincerely,

Robert F. Stewart

Robert F. Huvard

Regional Environmental Officer

Response Summary

Robert F. Stewart, USDI, Office of Environmental Affairs, April 26, 1991.

- 1. Agreed. Additional mitigation measures have been incorporated. Reference: Chapter II, Features Common to all Action Alternatives.
- 2. Additional information on burning prescriptions and timing have been incorporated. Reference: Chapter II, Features Common to all Action Alternatives.
- 3. The Wildlife Biologist has made 26 field trips to the analysis area and has not found any ferruginous hawk nests. Additional contacts include, Jack Kirkley Western Montana College, AI Harmata MSU, Danny Gomez Red Rocks Wildlife Refuge, and Marco Restani Graduate student MSU to determine if there were any known ferruginous hawk nests in the analysis area. While birds are occasionally seen, ferruginous hawks do not appear to be resident in much of the analysis area. The Landon Ridge/Patchtop Mountain area is where most of the sightings occur and could represent nesting activity. Chapter II, Features Common to all Action Alternatives describes mitigation measures if a nest is found. The 300 yards is based on a recommendations by Olendorff 1973 and Snow 1974 (See Literature Cited). New research has been pointed out which gives a recommended 440 meter buffer from disturbance (White and Thurow 1985 and Stahlmaster 1988). Based on these documents, the 440 meter buffer will be used. Whenever possible, burns in the upper West Fork will be planned for fall. The mitigation measure of a 40-60% burned/unburned mosaic in the units in the upper reaches of the West Fork Madison will still be in place.
- 4. Only 1 (one) sage grouse has been seen in the past 8 years within the analysis area. According to Gene Stroups, former Red Rocks Wildlife Refuge Manager, there had been good populations of sage grouse on the south side of Landon and Patchtop ridges in the last 10 years. He did not know of sage grouse within the West Fork drainage however. Reference: Chapter II, Monitoring, Sage Grouse; and Chapter III, Affected Environment, Wildlife.
- 5. Red Rocks Wildlife Refuge personnel know of no wintering sage grouse in the area you indicated. Gene Stroups, former Red Rocks Refuge Manager stated that he believed most if not all birds left the Centennial Valley in the winter. Snow depths generally are much too deep to allow wintering birds any sage to feed on. As far as Forest lands are concerned, the West Fork and Antelope Basin also have snow too deep for the sage to be available for the birds. Wintering birds are thought to either fly to Idaho or west to the west side of Interstate 15. Reference: Chapter III, Affected Environment, Wildlife.
- 6. Reworded to clarify. Reference: Chapter III, Affected Environment, Wildlife.
- 7. Same response as 4 above. Given the low populations and the 20 year burn cycle with the listed mitigation measures, the cumulative impacts outside the Gravellies is believed to be minimal. Reference: Chapter IV, Environmental Consequences, Wildlife.
- 8. Reference: Chapter III, Affected Environment, Vegetation, and Livestock Management. Rangelands are currently in good condition. Current grazing systems will be continued. Our intent is to integrate the burning program within the grazing systems.

- 9. Because of the scheduling within the rest period of the grazing rotation, burn units will have at least one full season of growing season deferment after treatment. Reference: Chapter II, Features Common to all Action Alternatives.
 - Browsing of aspen regeneration has not been determined as a major cause of the loss of aspen stands. Several exclosures are currently in place at this time in the analysis area. Since 1989, 165 acres of aspen have been cut down. All stands have responded to this treatment and only one stand shows excessive browsing by cattle. Cliff Lake Natural Area has no cattle grazing yet exhibits the same lack of regeneration. Some browsing is present, and is quite high in some stands. Based on these findings, it appears that the problem of no regeneration or no healthy regeneration is not the result of cattle browsing but is more likely to be due to the lack of a catastrophic event which would stimulate aspen regeneration. Reference: Chapter III, Affected Environment, Vegetation; and Aspen Background Document in project files.
- 10. Vegetation conditions are generally good, including riparian areas. Reference: Chapter III, Affected Environment, Vegetation, Water and Fish, and Soils and Geology. Because of these conditions, impacts on wildlife are not significant. A secondary benefit of burning is the pulling of livestock out of riparian areas and help them to an improving condition. Reference: Chapter IV, Environmental Consequences, Vegetation and Livestock Management.
- 11. Same response as 8 and 9 above.
- 12. Reference: Chapter III, Affected Environment, Vegetation; and Chapter II, Monitoring, Sagebrush Mosaic and Sagebrush Reestablishment; Chapter IV, Figures IV-1 thru IV-5. Canopy cover of all units has already been completed and is available in the project file. Also, refer to Aspen Background Document in project file. Livestock grazing or grazing by any other animal has not been a major impact on the cause of the loss of aspen in the area. Surveys the past 2 summers indicate a lack of regeneration under many of the stands. The lack of fire is believed to be the cause of lack of aspen regeneration. A comparison of the stands in the analysis area with the aspen stands found in the Cliff Lake Natural Area (where no livestock grazing is allowed) found a similarity in respect to general health and a lack of regenerating capability. Stands which have been treated in the Antelope Basin area the past two years have all shown excellent regeneration with only one stand exhibiting significant livestock browsing. Permanent photo points and transects in addition to exclosures have been established to continue monitoring these stands.
- 13. Same response as 12 above.
- 14. Same response as 12 above. Also, the burn which have occurred east of Hidden Lake in 1985 burned into several aspen stands. In all instances, aspen regeneration is present along the edges. Aspen averages over 6 feet in height.
- 15. While some browsing has occurred on some of the stands which have been burned, most shoots are now out of reach. Specific mitigation and monitoring measures are incorporated to track aspen response and utilization. Reference: Chapter II, Features Common to all Action Alternatives, and Monitoring.
- 16. Potential burns on private land were considered in our analysis of cumulative effects. The area identified is felt to be sufficiently large in size for us to respond to the issues and display the direct, indirect, and cumulative impacts pertaining to sagebrush. Reference: Chapter III, Affected Environment, Vegetation; Chapter IV, Environmental Consequences, Vegetation, and Figures IV-1 thru IV-5.

NO TEXT THIS PAGE

APR 3 0 1391

April 26, 1991

Mark A. Petroni USDA Forest Service District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

RE: Draft Environmental Impact Statement, Gravelly Sagebrush Burning, Beaverhead National Forest

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Dear Mr. Petroní:

I have completed a review of the Draft Environmental Impact Statement for the Gravelly Sagebrush Burning Project, Beaverhead National Forest, Montana. I was generally pleased with the DEIS as a whole. It was well organized, concise, and the proposed alternatives were thoroughly discussed. However, there were several deficiencies. The following is a list of deficiencies I found in the DEIS. They include:

- Discussions concerning impacts to any cultural, historic, or archaeological sites that might be present within any of the allotments proposed for burning should be included in the FEIS, as well as mitigation measures if such sites are identified;
- Justification or a citation for unburned filter strip widths along waterways should be included in the FEIS. The figures stated in the DEIS (on pages II-8 and IV-25) indicate a 50' buffer strip will be left unburned on flat ground and a 100' buffer strip will be left unburned on slopes of 15% or greater to mitigate potential water quality impacts created by increased sediments following a burn. No explanation of how these figures were calculated was included in the DEIS;
- Information should be provided concerning the methods used to identify Ferruginous hawk nesting sites, as well as information on post-burn monitoring of identified nesting sites for impacts to the Ferruginous hawk resulting from a burn;
- 4) Scientific names were not consistently listed along with common names and should be listed for all species mentioned in the DEIS (See page IV-4);
- 5) Discussion regarding the State of Montana's regulations and guidelines concerning the environmental effects of burning projects such as

the one proposed for the Gravelly Sagebrush should be included in the FEIS; and

have on non-game species located within the allotments should be included in the FEIS. On page IV-28 it was mentioned that one of the possible environmental effects that cannot be avoided is the impacts to non-game wildlife species as a result of a change in habitat diversity. Although this impact may be considered unavoidable, a discussion should be included describing what non-game species will be affected and whether they will be impacted beneficially or negatively from the burns.

I hope the above deficiencies in the DEIS are addressed prior to the date the record of decision is announced for the proposed Gravelly Sagebrush Burning plan and if possible, responded to in the Final Environmental Impact Statement. Thank you for your consideration.

Sincerely,

Mark Scott Gibb

Vark Scott Ith

Response Summary

Mark Scott Gibb, April 26, 1991.

- 1. Cultural, Historic, or archaeological sites are discussed in a memo from the Forest Archeologist in the project file. The burning will require no ground disturbing activity. With the fire history in the sagebrush/grassland habitat types in this area of about 11-15 years, any disturbance of these sites will have already occurred. Any effect from the current burning proposal will have very minimal effect on any cultural resources.
- 2. These figures were developed through literature review, past experience in these habitat types, and professional judgement of the Forest hydrologist. Reference: Chapter II, Specific Features and Mitigation Measures, Watershed; Chapter III, Forest-wide Goals, Objectives, and Standards, Watershed Standards and Soils Standards; Water and Fish, Affected Area, Soils and Geology; and Chapter IV, Watershed.
- 3. Reference: Chapter II, Specific Features and Mitigation Measures, Wildlife; Chapter III, Sensitive Species; and Chapter IV, Sensitive Species.
- 4. To make the document more easily read and understood, common names are used for most species.
- 5. Reference: Chapter III, Forest-wide Goals, Objectives, and Standards, Watershed and Air Quality Standards; Chapter IV, Watershed and Air Quality, and Specifically Required Disclosures.
- 6. Reference: Chapter II, Non-game and Small Game Habitats; Chapter III, Non-game Species; Chapter IV, Environmental Consequences, Non-game and Small-game species; Direct and Indirect Effects by Alternative, Non-game and small game.

APR 25 Tall

April 27, 1991

Mark Petroni, District Ranger 5 Forest Service Road Ennis, Montana 59729

Dear Mark,

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Just a few comments on the DEIS on sagebrush burning in the Westfork Madison and Antelope Basin.

I believe that the DEIS was well researched and written with a middle of the road attitude. It seems to me that the concerns of wildlife habitat, fishery habitat, ecological and economic values were addressed, as well as the maintaining of forage needed to sustain the present permitted numbers of livestock.

The sportsmen are insisting that burning of sagebrush and the treating of conifer encroachment is to increase the amount of forage for livestock. I see it as a way to increase forage for all species of grazers whether livestock, deer, elk, etc. and to provide a diversity of sagebrush and/or regenerate the dying Aspen groves.

The Forest Plan states that the livestock AUM's will remain at approximately 190,000 AUM's.

After reviewing your proposed four (4) alternatives, I would like to see Alternative (3) be considered as the plan to be implemented. It appears to be the more balanced alternative for habitat, forage and landscape diversity. I would like to see more sagebrush burned to reduce the amount of late stage canopy cover.

The Forest Service is directed by the Forest Plan to provide wildlife habitat, recreation opportunities and to provide forage for livestock and if burning is a management tool to better the resource then the Forest Service should be able to use it.

Thank you for giving me the opportunity to comment on this DEIS.

Sincerely,

William A. Stender

William a Stender

Chapter V

Response Summary

W.A. Stender, April 27, 1991.

Comments were of a general nature. No questions, new issues or information, or additional analysis needs were identified. The comments will be considered in preparing the Record of Decision.

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RANGER Mark Petroni, District Ranger
SUP RGE 5 Forest Service Road
T.M.L. Ennis, Montana 59729

29 April 1991

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You seem to tie the number of elk wintering on private land to the permitted use on public land during the grazing season. Much of this private land is owned by large out of state corporations that have closed off access to the general public. These corporations picked up the land at bargain prices and we subsidize their livestock grazing on our public land. The whole program is a big tax write-off.

You make it sound as if we owe them more pasture on our public lands and that we can do this by burning sagebrush. Would'nt it be easier to develop a buffer zone on public land boardering the private land and adjust the pasture system to allow enough grass and sagebrush for wintering elk?? Elk and deer can survive on sagebrush during severe winters—it has a higher protein content and it is easier forage for wildlife to reach when the snow is deep. If such a system could be developed, it would take a great deal of pressure off the private land in the Madison valley.

3 You also implied that too many restrictions are forcing ranchers out of business. This is not the case, cheap land prices and the fact that everyone wants a piece of Montana is the real reason behind changing ownerships—this is the free market system. Large tax breaks and government subsidies are also drawing outside investors.

The biggest problem with this whole issue is that you antagoize the permittee when you state that you are going to reduce livestock numbers by 22 % if sagebrush is not burned. Those of us that are also public land users see a bad precedent being set and we question this practice just from a wildlife standpoint. This places us at immediate odds with the very people that we should be cooperating with. If you offered some scientific evidence where burning helps wildlife, we could reach a middle-ground compromise, but I can find no data confirming this.

6 The Fish and Game department, the BLM and numerous other groups and individuals are opposed to the Draft plan, yet you are forcing this issue down the throats of other public land users—is this true multiple use?? None of the experts that I know agree with the plan, but unfortunately some individuals within the forest service have gound treatment by fire burned into their brain without really having any technical knowledge or background to justify their actions.

7 So much of our public lands have been mis-managed in the past that a proposal such as yours invites suspicion, especially when there is so much opposition. It is imperative that our public lands

are continually up-graded and improved for the benifit of livestock and wildlife/if they are not, forces much greater than ours will force land-use practices on those lands that will not fit our lifestyle or our traditional uses of these lands.

8 One other point that I did not want to argue over during the meeting was the 30% burn proposal in key elk calving areas. Why burn any sagebrush in these areas at all--this does not make sense nor is their any scientific data to back this action up. Your biologist only mentioned that if these areas were not burned, you would not obtain the forage levels you anticipated. Who is he working for--certainly not all public land users.

I believe that the burning program that you are proposing is totally unfair and that it will be torpedoed before it gets off the ground. OI urge you again to incorporate all the research data that we sent you prior to the draft and include this information in the final EIS. I also endorse the Skyline comments and the eight page letter sent by the department of FW&P, please include/as part of my comments.

Thom

ornerett,

Tony Schoonen

Response Summary

Tony Schoonen, April 29, 1991.

- This is incorrect. What I presented at Butte was the amount of wildlife in the Madison Valley that is dependent on private lands for winter range. One of the benefits of the public lands grazing program is keeping the base property for these ranches intact as open space and wildlife habitat. The Forest Plan addresses the levels of livestock grazing on the National Forest. The decision to graze livestock is made in the Forest Planning process. Sagebrush burning is a tool used in livestock management systems to provide the needed forage for the permitted livestock over time. (Reference: Principles of Rest-Rotation Grazing and Multiple-Use Land Management by August L. Hormay, Sept. 1970, on page 23 Cultural Practices).
- Winter Range on the National Forest is limited by the topography and snow depths. Currently the winter ranges on the National Forest are being managed to maximize forage for wintering wildlife. The bulk of the winter range will always be on private lands in the valley.
- 3. The biggest threat to wildlife in the Madison Valley is subdivision of winter ranges on private lands. As I indicated at the meeting, multiple use of the public lands, of which livestock grazing is one of them, can play a part in keeping these ranches in tact and will benefit wildlife in the long run.
- 4. The EIS evaluates the trade offs of the alternatives. Under the no action alternative I, there would be no burning. This will result in a decreased amount of forage amounting to 3654 AUM's. This loss in forage would result in needs for adjusting some uses, whether it would be livestock or wildlife would be made on an allotment by allotment basis when management plans are updated. Reference: Chapter II, Table II-12; Chapter IV, Direct and Indirect Effects by Alternative, Alternative 1; Livestock Management; Direct and Indirect Effects by Alternative 1.
- 5. Scientific data is presented to show the tradeoffs of alternatives: Reference: Chapter II, Environmental Issues, Issue 1, Wildlife; Chapter III, Description of the Affected Environment, Wildlife; Chapter IV, Wildlife Effects. Literature Cited contains 66 documents cited within the EIS. No additional scientific documents or citations were provided in this letter.
- 6. The Montana Department of Fish, Wildlife, and Parks is not opposed to the Draft Plan. They do not think burning sagebrush is needed for wildlife, but recognize that multiple use of public lands is a valid use. The BLM is not opposed to the project. There are some groups such as Skyline Sportsmen, and American Wildlands, and some individuals oposed to the project. See 5 above for technical knowledge and background justifying this action.
- 7. No list of past mismanagement is provided. Evidence would suggest that there is more support than opposition to the project. In the initial scoping we received 88 written comments of which 63 (72%) were favorable and 25 (28%) were opposed. Written comments on the DEIS are about the same percentages as shown above. Votes are not counted when evaluating a project, just the content as it is relevant to the project proposal. This project is specifically designed to upgrade and improve the public lands for multiple use purposes.
- 8. Elk Calving was a major concern addressed in this EIS. Reference: Chapter II, Environmental Issues, Issue 1, Wildlife; Monitoring, Elk; Comparison of Alternatives, Elk; Table II-12. Chapter III, Existing Condition, Elk; and Chapter IV, Direct and Indirect Effects by Alternative, Elk.

Chapter V

9. All comments and materials received in the initial scoping process and responses to the DEIS have been reviewed and evaluated and are a part of the project file. Reference: Chapter II, Description of Scoping and Public Involvement.

Gallatin WILDLIFE Association

Bozeman, Montana

April 29, 1991

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MAY (1 1991

Mr. Mark Petroni District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

Dear Mr. Petroni:

This letter is in regards to the Gravelly Sagebrush Draft Environmental Impact Statement.

The Gallatin Wildlife Association favors Alternative #1, No Action.

The GWA is not convinced that any of the action alternatives produce enough public and private benefits to warrant adoption at this time. It is our preference that the natural progression of sagebrush stands should continue to be monitored. As the DEIS points out there is some basis for believing that sagebrush canopies will open periodically through natural mortality. Until stronger evidence is available to support controlled burning as a means to improve wildlife habitat we recommend waiting. Certainly the wildlife populations and wildlife habitat is not seriously threatened by at least temporarily choosing the "no action" alternative.

We do have concerns about improving the condition of aspen stands in the study area. Again, however, we do not feel that the DEIS makes a compelling argument for intervention through controlled burning.

We commend you and your District for the progress you have made in studying this issue. The DEIS is an important benchmark document for future management of the Madison Ranger District. Thank you for the opportunity to comment.

Sincerely,

Gene Quenemoen, President

606 Frank Road Belgrade, MT 59714

Chapter V

Response Summary

Gene Quenemoen, Gallatin Wildlife Association, April 29, 1991.

Comments were of a general nature. No questions, new issues or information, or additional analysis needs were identified. The comments will be considered in preparing the Record of Decision.

MAY 02 1991

April 29th, 1991

Mark Petroni, District Ranger Madison Ranger District 5 Forest Service Road Ennis, Mt. 59729

Re: Gravelly Sagebrush

Dear Mr. Petroni,

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The agency efforts to address the impacts through the DEIS are appreciated, but I feel that more work must be done to have a complete and fair analysis. There are too many unanswered questions in addition to deleted recommendations.

Nowhere did I see an analysis of how the range is currently being used by cattle. Specifically, what is the current utilization of areas in sagebrush where canopy cover is 5%, 10%, 15%, 20%, 25% or greater? Does livestock utilization diminish with an increased sagebrush canopy cover? If so, can we expect domestic livestock use to become more frequent in an area where sagebrush canopy cover is reduced? How will this increased intrusion effect wildlife habitat needs other than forage.

Any analysis of how wildlife are impacted by destruction of sagebrush needs to address more than forage requirements as they relate to pounds of production. More pounds of forage production, from a wildlife perspective doesn't necessarily equate to a benefit for wildlife. There are other considerations to think about. Will sagebrush eradication cause a conflict in areas of use between wildlife and cattle? There are many studies that indicate that there can be an incremental decrease use by wildlife proportional to the increased use by livestock. This is documented by Loft, Menke, and Kie. "Female mule deer shifted habitat use by reducing their habitats preferred by cattle and increasing their use of habitats avoided by cattle. (See Habitat Shifts by Mule Deer: The Influence of Cattle grazing.) Furthermore, a study of radio collared elk in the Missouri River Breaks indicates that elk move with the introduction of cattle. "The third elk restricted the area it used in the grazed pasture and made more intensive use of an adjacent grazing allotment which had a lighter stocking rate." These quotations demonstrate how forage is used in areas that are impacted to varying degrees by the intrusion of cattle. This shift in certain wildlife populations should illustrate that burning, while increasing pounds of forage overall, could have the effect of diminishing forage usage in an area if it is used more by cattle. This is why an analysis of the use of in different sagebrush canopy cover cattle densities important.

The greatest problem, however, is not from the conversion of sagebrush to grass and forbs as they relate to forage. Sagebrush provides very critical cover for many species of wildlife. Less sagebrush means less habitat. Less nesting cover, less calving cover, and less cover for mule deer in the fall. Less habitat equals less wildlife.

According to the Beaverhead National Standards, Forest Populations of wildlife indicator species will be monitored to measure the effect of management activities on representative wildlife habitats with the objective of ensuring that viable desirable native and existing of vertebrate species are maintained. It's obvious that this hasn't been done in this analysis area. According to recent data, sagegrouse populations are at a low, and yet the DEIS does not and forest biologists cannot identify sagebrush areas that have and could serve to provide critical habitat to this species. Knowing that the viability of sagegrouse is directly dependent upon sagebrush, it seems that the Forest Service has failed to reasonably consider the impacts caused to sagegrouse by destruction of unfound habitats. It is certain that if leks are or have been destroyed that the viability of sagegrouse in this area will be precarious at best. Not only does this alarming decline adequately address the fail to sagegrouse as it relates to sagebrush habitat, but the present low population could be attributed to non-compliance with the mandate of the Beaverhead National Forest Plan. (Refer to Forest Plan II-26 #4, II-27 #9, II-27 #10, II-27 #12).

Sagebrush habitat destruction, as I have been told, continued since the inception of the current Beaverhead National Forest Plan. This has occurred despite a lack of site-specific to sagebrush and its importance information relating sagegrouse for nesting, to elk for calving, and to deer The sagebrush eradication that occurred 30 paralleled a decline in sagegrouse populations that have been low ever since. It's probably more that just coincidental that these populations have not recovered, as any biologist confirm that re-establishment is extremely difficult. does not make any information available that would that attempts on the part of the Forest have been made to study sagegrouse populations despite Forest Plan Standards present that give guidelines for indicator species. No determination has been definitively made as to where the remnant populations of sagegrouse winter. It would seem that if adequate monitoring were done that we would, by now, know this information.

If current AMP's were designed to address wildlife habitat needs then it would seem that they need to be consistent with current Forest Plan Standards. II-27 #10 states that range allotment plans will address wildlife habitat needs. Was a study of elk calving areas integrated into the development of these current AMP's? Were the AMP's and vegetation manipulation projects designed to consider potential impacts on wildlife,

especially critical use areas such as calving and nesting areas? Were they designed with standards in mind that mandate that two thirds of the hiding cover associated with key habitat How AMP's and practices components be maintained? such sagebrush burning used to sustain domestic AUM's affect wildlife, clearly, has not been properly addressed in the past. Sagebrush stands, even if burned in a 50% mosaic, may have already had detrimental and perhaps irreversible impacts to wildlife. The errors of the past will only be compounded by refusing to look back.

While the DEIS states that Aspen numbers are diminishing and offers burning as a solution for re-generation it fails to take a sincere look at the reasons for its decline. The need to burn Aspen is unconvincing. I believe that depredation of young Aspen accounts for more of its decline than anything else, yet this is not explored. The answer could be to eliminate depredation by the guilty animal, which will more than likely prove to be cattle.

In speaking with the DFW&P biologist, he informs me that the department does not believe that sagebrush should be burned, 10 but that if you do so that identified elk calving areas be burned in a mosaic in which no more than 30% of the area is burned. The Forest Service should heed this advice in the event that burning is pursued.

Analysis of the costs to the public for any burning is not 11 clearly defined.

In summary, I would have to say that the DEIS doesn't convince me that there is good evidence to justify burning from a wildlife perspective. The wildlife evolved, quite successfully, in harmony with the natural environment. Manipulative burning may create more forbs and grasses but may not really be emulating natural processes for this site. There is no proof that 40,000 acres weren't always predominately occupied by sagebrush. the best suited plant evolved to occupy the site then it would seem that sagebrush burning will only lock us into a never ending cycle that cannot be sustained without loss to the public, both in terms of dollars and wildlife. Furthermore, Carl Wombolt has stated that it may be that sagebrush, if left alone, will on its own and naturally create the mosaic manipulation provides and do so at no cost.

Alternative #1 is naturally the best suited alternative. I strongly recommend it.

Thank you!

John M. Poulson

Response Summary

John M. Roylance, April 29, 1991.

- 1. Reference: Chapters III and IV, Livestock Management. All burns are on suitable livestock range. Livestock currently use the entire range within the project area. The stated purpose is to maintain current permitted numbers of livestock. Current livestock numbers will not change. Reference: Chapter II, Livestock Mangement.
- 2. Reference: Chapter I, Purpose and Need; Chapter II3, Wildlife and Livestock Mangement; Chapter IV, Direct and Indirect Effects by Alternative. Sagebrush is not being proposed for eradication. The proposed action would provided a variety of successional stages and canopy covers. Scienctific data is presented to show the tradeoffs of altenatives. All grazing allotments are in a rest-rotation or deferred-rotation system. Livestock are confined to a single pasture on an allotment at any one time during the grazing season. Generally during the grazing season cattle are found on no more that 20% of the project area at any one point in time.
- 3. Reference: Chapter II, Comparison of Alternatives; and Chapter IV, Environmental Consequences. The EIS displays effects by alternative, whether they are positive or negative.
- 4. Reference: Chapter II, Monitoring, Sage Grouse; Chapter III, Sage Grouse; and Chapter IV, Environmental Consequences, Sage Grouse. Only one sage grouse has been seen in the past eight years. Studies completed with Montana Fish and Game Department prior to the sagebrush spray program in the 70's found no evidence of any sage grouse in or near the spray areas. Given the low numbers of grouse present and the percentage of acres proposed, we did not anticipate any measureable changes in sage grouse populations.
- 5. The current condition of the sage grouse populations has been well documented. Reference: Chapter III, Affected Environment, Wildlife. This proposal is consistent with Forest Plan Goals, Objectives, and Standards. Reference: Chapter III, Forest Plan Management Direction.
- 6. Same as 4 above.
- 7. Reference: Chapter I, Pupose and Need. It is not the intent of this analysis to revisit all Allotment Management Plans. This is a site specific analysis on whether to burn and how much to burn. Allotment management planning takes into consideration wildlife/livestock interactions and mitigations.
- 8. Reference; Chapter IV, Direct and Indirect Effects by Alternative. The EIS displays effects by alternative, whether they are positive or negative. Also reference response number 14 for the comments received from American Wildlands.
- 9. Reference: Chapter I, Purpose and Need; Chapter III, Vegetation, Existing Condition. Also reference response number 29 for the comments received from American Wildlands.
- 10. Reference: Chapter II, Description of Scoping and Public Involvement, and Features Common to all Alternatives. Comments on unit field reviews and notes from additional review of the alternatives by Montana Fish and Game Department are included in the project file.

- 11. Reference: Appendix A, Economic Effects.
- 12. Reference: Chapter I, Purpose and Need. The purpose is to maintain permitted livestock numbers and meet forage needs of big game. This project is consistent with Forest Plan Goals, Objectives and Standards and Guidelines. The Forest Plan identifies the mix of resources and activities allowed within an area. Reference: Chapter III, Forest Plan Management Direction.
- 13. Reference: Chapter III, Vegetation, Existing Condition. Also refer to response number 14 and 16 for the comments received from American Wildlands. The proposal to burn the sagebrush is consistent with Forest Plan Goals, Objectives, and Standards. Reference: Chapter III, Forest Plan Management Direction.
- 14. Reference: Chapter III, Vegetation, Existing Condition; Chapter IV, Vegetation, Direct and Indirect Effects by Alternative. As noted no research has been completed to test this theory.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION VIII, MONTANA OFFICE FEDERAL BUILDING, 301 S. PARK, DRAWER 10096 HELENA, MONTANA 59626-0096

Ref: 8MO

April 30, 1991

Ronald Prichard Forest Supervisor Beaverhead National Forest 610 N. Montana Street Dillon, Montana 59725

> Re: Gravelly Sagebrush Draft Environmental Impact Statement

Dear Mr. Prichard:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Environmental Protection Agency's Region VIII Montana Office (EPA) has reviewed the above-referenced Draft Environmental Impact Statement (DEIS).

The Beaverhead National Forest has proposed four alternatives for burning sagebrush on the Madison Ranger District. Alternative 1 is the No Action alternative, while Alternative 3 (20 year cycle) is the Forest Service's preferred alternative. Approximately 1,512 acres would be treated (50% burned; 50% unburned) each year under Alternative 3. Approximately 42,168 acres total would be treated (managed) during the 20 year cycle.

In general, EPA has no objection to the Forest Service's preferred alternative, Alternative 3. EPA does have the following comments from our regional range conservationist.

- 1) i EPA suggests that a current resource inventory (range and ecology status) be completed. This information can provide plant species, plant conditions, treatment possibilities/adequacy, and associated plant species which might benefit or take over after various treatments are applied.
- The DEIS states that all grazing is based on a rest rotation basis. ZEPA asks why no rest period has been planned after the burning period of the preferred alternative? How long a rest period would be recommended? 3Can other "better" management plans be developed to utilize the benefits of the preferred treatment? 4Something must be gained by the activity

instigated, what here may be gained? Will the range be upgraded? 5Will this treatment be evaluated?

- 3) 6EPA asks what the goals are for the management of Aspen stands within the project areas? 7Will the preferred treatment provide for wildlife needs as well as for livestock? 8Why is even-aged management of Aspen here an objective?
- EPA is concerned about riparian areas which may undergo intense use by livestock forced from the burned areas. EPA feels strongly that a long term management plan/system is needed to protect and enhance riparian zones.

In accordance with the criteria that EPA has established for rating draft Environmental Impact Statements, we have rated this Draft EIS as category EC-2 (Environmental Concerns - Insufficient Information). A copy of EPA's rating criteria is attached.

10 EPA would like to receive a copy of the Record of Decision when it is available. If you need further EPA assistance, please fell free to contact Jeff Bryan of my staff at (406) 449-5486 or FTS 585-5486.

Sincerely,

John F. Wardell, Director

Montana Office

Enclosure

cc: Jennifer Harris, 8WM-EA Dawn Roberts, OFA-A104 Dan Merkel, 8WM-SP

SUMMARY OF RATING DEFINITIONS

ENVIRONMENTAL IMPACT OF THE ACTION

LO--LACK OF OBJECTIONS

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--ENVIRONMENTAL CONCERNS

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--ENVIRONMENTAL OBJECTIONS

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--ENVIRONMENTALLY UNSATISFACTORY

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

ADEQUACY OF THE IMPACT STATEMENT

CATEGORY 1--ADEQUATE

EFA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

CATEGORY 2--INSUFFICIENT INFORMATION

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

CATEGORY 3--INADEQUATE

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information,data, analyses, or discussions are of such magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEFA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Impacting the Environment."

Response Summary

Donald E. Pizzini, Environmental Protection Agency, April 30, 1991.

- 1. Reference: Chapter II, Livestock Management; Monitoring. Chapter III, Vegetation. Chapter IV, Vegetation.
- 2. Rest periods have been provided in all alternatives. Reference: Chapter II, Features Common to all Action Alternatives, Livestock Management; and Chapter III, Table III-4, Livestock Management.
- Revising the Management Plans is outside the scope of this document. Current systems in place are working well. See 2 above.
- 4. Reference: Chapter I, Purpose and Need; Chapter IV, Environmental Consequences, Livestock Management.
- 5. Yes. Reference: Chapter II, Monitoring; and Chapter IV, Environmental Consequences, Vegetation and Livestock Management.
- 6. Reference: Chapter I, Purpose and Need; Chapter III, Affected Environment, Vegetation; and Chapter IV, Environmental Consequences, Landscape Diversity and Vegetation.
- 7. Reference: Chapter II, Comparison of Alternatives, Table II-2 Comparison of Alternatives Summary; and Chapter IV, Environmental Consequences.
- 8. Reference: Chapter I, Purpose and Need; Chapter III, Affected Environment, Vegetation; Chapter IV, Environmental Consequences, Vegetation; and Aspen Background Document in the project file.
- 9. Reference: Chapter IV, Vegetation, Effects Common to all Action Alternatives; Livestock Management, Effects Common to all Action Alternatives. We would expect that livestock would be drawn away from riparian areas as forage opportunities would be improved in the uplands.
- 10. Copy of Record of Decision and Final EIS will be sent when completed.

MADISON RD

MAY 01 1991

RECEPTIONIST.

MONTANA PUBLIC LANDS COUNCIL

P. O. BOX 1679 — HELENA, MONTANA 59624

Phones (406) 442-3420
SUP RGE
T.M.L.
_WILDLIFE
TELNINTIG GLASGOW
WALL COLLINS FORT PECK VICE CHAIRMAN
JEROME WILLACK HELENA SECRETARY/TREASURE
WALT COLLINS FORT PECK VICE CHAIRMAN JEROME W. ACK HELENA SECRETARY/TREASURE KIN ERUD HELENA NATURAL RESOURCES COORDINATOR
SALE ADMIN
SRWCULTURE
TAMBER IFCH

DIRECTORS:	
JOHN F. BAUCUS .	. WOLF CREEK
LYNN CORNWELL	, GLASGOW
MARK DAVIES	CHINOOK
SEVER ENKERUD	GLASGOW
WM. E. GARRISON	GLEN
JACK HUGHES	GRASSRANGE
CURT OWEN	HAMMOND
GEORGE RATHS	ROUNDUP
MAYNARD SMITH	GLEN
MARK STEVENS	ASHLAND

April 30, 1991

Mark Petroni District Ranger 5 Forest Service Road Ennis, MT 59729

Dear Mr. Petroni:

The Montana Public Lands Council, an organization representing livestock permittees on federal lands, would like to offer the following comments on the Draft Environmental Impact Statement (DEIS) for the Gravelly Sagebrush Project on the Madison Ranger District of the Beaverhead National Forest.

- 1. The April 17, 1990 directive calls for compliance of allotment management plans according to forest plans. Alternative 3 is consistent with the forest plan and will provide forage needed to maintain the current livestock grazing program and wildlife needs.
- 2. The Montana Public Lands Council advocates controlled burns to improve rangeland condition. In this case, areas that are being burned will improve the management of the public lands and will best serve the public interest.
- 3. While the DEIS states there will be no increase in livestock numbers, we would like to caution that an increase in wildlife numbers will need to be evaluated. It is very easy to control livestock both in numbers and in season of use, however, we feel wildlife numbers must also be evaluated and managed as they can also negatively affect the environment.
- 4. As indicated in the DEIS summary, forage production is decreasing due to sagebrush, douglas fir encroachment, and aspen establishment. Thus causing more pressure to be placed on riparian areas by wildlife and livestock. Opening up these areas will create the opportunity for cattle to utilize these areas through proper management and alleviate the pressure on riparian areas.

The Montana Public Lands Council supports and recommends Alternative 3 - 20 year burning cycle in the Gravelly Sagebrush DEIS as it will best serve the needs of the resource.

Sincerely,
Sim Enkered

Natural Resources Coordinator

KE/1c

Chapter V

Response Summary

Kim Enkerud, Montana Public Lands Council, April 30, 1991.

Comments were of a general nature. No questions, new issues or information, or additional analysis needs were identified. The comments will be considered in preparing the Record of Decision.

MAY 01 | 1

The Ecology Center 101 E. Broadway, Rm 602, Missoula, MT, 59802 (406) 728-5733

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April 30, 1991

Mark A. Petroni District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

Dear Mark:

Please accept the following comments on the proposed Gravelly Sagebrush Burning Draft Environmental Impact Statement (DEIS):

1) The entire context of the project is permeated by the assumption that livestock AUMs will be maintained at current levels. While the Forest Plan specifies that stocking levels will be maintained or increased, that specification is qualified by the stipulation that fishery habitat, riparian areas, recreation and other forest resources must be concurrently protected. Therefore, the assumption that current stocking levels must be maintained is to be examined critically in the context of other Forest uses. The DEIS does not do this, and the Purpose and Need section does not suffice to justify the project.

The EIS should address the need to maintain all Forest resources, and should endeavor to discover which combination of activities (eg. burning, livestock number manipulations, riparian improvements) is most effective at achieving protection of <u>all</u> segments of the Forest ecosystem, with no one use (ie. livestock grazing) given automatic overriding

importance.

- 2) The DEIS discussion of the effects of the posed project on T,E & S, and management indicator species does not conform to the NFMA requirement that effects on these animals should be expressed in terms of specific population data, including past, present and likely future numbers. If monitoring of populations is not adequate to evaluate such populations with any certainty, the Forest Service should analyze the likely effects of proceeding in the face of such uncertainty.
- 3) The DEIS does not address the indirect effects of altered livestock grazing patterns on a whole range of environmental components. Burning of sagebrush will undoubtedly alter grazing patterns, and the DEIS should acknowledge this and analyze the effects accordingly. Examples of parts of the ecosystem that would be affected by altered grazing patterns include: sensitive and watch list plants, riparian areas, water yields, water quality and fish habitat.

Thank you for considering these comments.

William Haskins

Response Summary

William Haskins, The Ecology Center, April 30, 1991.

- 1. Reference: Chapter I, Purpose and Need. This project is consistent with Forest Plan Goals, Objectives and Standards and Guidelines. The Forest Plan identifies the mix of resources and activities. Reference: Chapter III, Forest Plan Management Direction. The Integrated Area Analysis (IAA) process for the Antelope Basin and Westfork Areas identified the need for this project as a Forest Plan implementation opportunity that will be consistent with all other resource needs. Forest Plan and IAA writeups are filed at the District.
- 2. Reference: Chapter II, Specific Features and Mitigation Measures, Wildlife; Monitoring, Sage Grouse and Elk; Comparison of Alternatives; Elk, Sage Grouse. Chapter III, Wildlife Standards 4 and 12; Description of the Affected Environment, Wildlife. Chapter IV, Environmental Consequences, Wildlife. Biological Assessment, Threatened and Endangered Species, Appendix B. Letter of February 22, 1991 from the United States Fish and Wildlife Service concurring with the Biological Assessment that this project is not likely to adversely affect, and they do not anticipate any incidental take of listed species as a result of the proposed project.
- 3. All of this is covered in the document. All areas are currently grazed by livestock and systems are in place, no change in systems is planned. Reference: Chapter II, Livestock Management; and Chapter IV, Environmental Consequences.

MAY 01 1991

April 30, 1991

Mark A. Petroni District Ranger Madison Ranger District 5 Forest Service Road

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Dear Mark,

Thank you for the opportunity to comment on the DEIS for the Gravelly RECLIPTIONIST.

Sagebrush Project.

As livestock permittees in the BU FIOX Allotment we are understandably concerned with maintaining a diversity of plant communities. From a pureist standpoint of raising more forage we would naturally favor more sage burning than has been recommended in Alternative 111. However, we are very caring that wildlife habitat will not be adversly affected by this proposed action.

Your office seems to have done a very thorough job of researching key wildlife areas that must be protected and/or excluded from the proposed action area. Those of us who spend a great deal of time on the National Forest have observed the positive ramifications of the sage brush control in stimulating increased folage production for wildlife as well as livestock.

Elk calving grounds always seem to be an area of concern when any type of resource management action is proposed. We observe elk calving every spring in the Fish Creek Drainage, on a south slope that was sprayed for sagebrush many years ago. The elk seem to prefer giving birth in the open areas left by the sage control and then move their new born to the security of the adjacent timber or the brush left untouched by the spray project. I don't mean to suggest that the sage on the elk calving areas should be burned but I feel this is a good example of sagebrush control, done properly, directly benefiting willdlife habitat.

We feel that the burning that has been done on our allotment in the past has greatly benefitted the resource. The impacts of this proposal will surely be equally productive. You and your staff are to be commended for the thorough manner in which you have conducted this analysis. Please contact us if we can be of any assistance in getting this project on the ground.

Sincerely,

John C. Anderson Ruby Dell Ranch

Alder, MT. 59710

John C. anderson

Chapter V

Response Summary

John C. Anderson, April 30, 1991.

Comments were of a general nature. No questions, new issues or information, or additional analysis needs were identified. The comments will be considered in preparing the Record of Decision.



Board of County Commissioners

MADISON RD

Box 278

VIRGINIA CITY, MONTANA 59755

MAY 01 1991

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April 30, 1991

Mr. Mark Petroni District Ranger Madison Ranger District 5 Forest Service Road Ennis, MT 59729

Dear Mr. Petroni:

We as a Board of County Commissioners would like to comment on the Gravelly Sagebrush Draft Environmental Impact Statement.

We feel that sagebrush control is essential in the management of resources in Madison County. This is an outstanding document covering all facets of economic, ecological and environmental impacts.

With our years in Madison County and seeing the benefits of sagebrush burning, both by wildfire and prescribed, we feel it is imperative to have a burning program. With the encroachment of Doug Fir and the sagebrush canopy, it is long overdue to initiate an aggressive plan as such.

As a good management tool of our resources we commend Ranger Petroni for his aggressive approach with the DEIS. This statement meets the needs of forage for the increase of big game numbers in the Gravelly Range and maintains the permitted numbers of livestock.

We as a Board of Commissioners recommend Alternative II as the most acceptable alternative, of the four, in the DEIS. We would, however, support an increase of acres burned in a moszic pattern other than what Alternative II calls for. It is our belief that forage is a more critical factor for wildlife than cover. Elk can calf without sagebrush, but they can not survive without feed.

Once again, we support Alternative II of the Gravelly Sagebrush DEIS.

Sincerely,

BOARD OF MADISON COUNTY COMMISSIONERS:

JOHN D. ALLHANDS, Chairman

BYRON BAYERS, Commissioner

W.L. HANCOCK, Commissioner

Chapter V

Response Summary

Madison Board of County Commissioners, April 30, 1991.

Comments were of a general nature. No questions, new issues or information, or additional analysis needs were identified. The comments will be considered in preparing the Record of Decision.



CORRAL CREEK RANCH Monida Star Route Lima, Montana 59739

MADISON RD

MAY 1 3 1991

May 8, 1991

Mr. Mark A. Petroni
District Ranger
United States Department
of Agriculture
Forest Service
Beaverhead National Forest
5 Forest Service Road
Ennis, Montana 59729

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Dear Mark:

Nina and I have your letter of March 11 with its enclosed DEIS for the Gravelly Sagebrush project. We also have your letter of April 19 concerning the meeting held on April 25 concerning the DEIS. Unfortunately, your letters did not reach me until after the April 25 meeting.

I am writing to go on record as favoring the Forest Services preferred alternative, Alternative III - 20-year cycle. In my judgment, this alternative will benefit both wildlife and livestock.

Sincerely,

Carroll L. Wainwright, Jr.

CLW, Jr./lj

Chapter V

Response Summary

Carroll L. Wainwright, Corrall Creek Ranch, May 8, 1991.

Comments were of a general nature. No questions, new issues or information, or additional analysis needs were identified. The comments will be considered in preparing the Record of Decision.

Jack Atcheson & Sons, Inc. INTERNATIONAL HUNTING FISHING & PHOTOGRAPHIC CONSULTANTS

INTERNATIONAL TRAVEL AGENCY

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3210 Ottawa Street Butte, Montana USA 59701 Telex 551-643 — FAX 406-723-3318

Telephone

(406) 782-2382

(406) 782-3498 Travel Agency (406) 494-2415



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S.S. REC.PT.ONIST

Response Summary

Jack Atcheson, May 9, 1991.

Participant provided additional information on water repellency of soils under burned sagebrush and requested comment on the information. See letter below.

United States Department of Agriculture

Forest Service Beaverhead National Forest Madison Ranger District 5 Forest Service Road Ennis, MT 59729 (406)682-4253

Reply to: 1920

Date: May 10, 1991

Jack Atcheson & Sons, Inc. 3210 Ottawa Street Butte, Montana 59701

Dear Jack:

I have received your article on Water Repellency of Soils under Burned Sagebrush. I will consider this as a concern or comment in the Final Environmental Impact Statement for the Gravelly Sagebrush Project.

Water repellency of soils is a concern and is addressed in the way our prescriptions for individual burn units are written. With the prescriptions specifying a 50% mosaic, which is what we are planning for, soil and mulch are cool and damp. This results in soil temperatures which do not approach the range shown in this study. Soil types vary on their response to water repellency with heat, so this also has to be considered. To date we have not observed this as being a problem on any of our previous burns on the District.

Sincerely,

MARK A. PETRONI
District Ranger

Wellan Mut

enclosure

LIST OF PREPARERS



LIST OF PREPARERS

Name/Area of Expertise and Experience (Years)	Issue Area	Professional Education
Pete Bengeyfield Hydrologist (14)	Hydrology Fisheries	BS, Forest Management MS, Forest Hydrology
Bill Henness Fire Management Officer (17)	Fire/Fuels	BS, Agriculture
Loren Iverson Operations Research Analyst (10)	Financial Analysis	BS, Mathematics MS, Systems Management
Mark Petroni Madison District Ranger (16)	Deciding Officer	BS, Forestry
Ron Schott Range Conservationist (20)	Range Vegetation	BS, Wildlife Biology
Bill Shuster Wildlife Biologist (16)	Wildlife	BS, Biological Sciences
Joe Spehar Forest Plan Implementation (20)	Writer/Editor	BS, Forest Management
Kevin Suzuki Range Conservationist (10)	Vegetation Diversity	BS, Forestry (Range Option
Dan Svoboda Soil Scientist (14)	Soils	BS, Forestry MS, Plant & Soil Science



ITERATURE CITED



Literature Cited

- Arno, S.F. and G.E. Gruell. 1983. Fire History at the forest-grassland ecotones in southwestern Montana. J. Range Manage. 36:332-336.
- Arno, S.F. and G.E. Gruell. 1986. Douglas Fir encroachment into mountain grasslands in southwestern Montana. J. Range Manage. 39:272-276.
- **Bayless, S.R.** 1969. Winter food habits, range use, and home range of antelope in Montana. J. Wildl. Manage. 33(3):538-551.
- Blaisdell, J.P.; R.B. Murray and E.D. McArthur. 1982. Managing intermountain rangelands Sagebrush-Grass ranges. Gen. Tech. Rep. INT-134. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.
- **Braun, C. E. 1987.** Current issues in sage grouse management. Proc. West. Assoc. Fish and Wildl. Agencies. 67:In Press.
- **Britton, C.M.** and **M.H. Ralphs.** 1978. Use of fire as a management tool in sagebrush ecosystems. *In* The sagebrush ecosystem: A symposium. April 1978, Logan, UT. Utah State University, College of Natural Resources.
- **Brown, J.K.** and **D.G. Simmerman.** 1986. Appraising fuels and flammability in western aspen: A prescribed fire guide. Gen. Tech. Rep. INT-205. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.
- **Bunting, S.C.; B.M. Kilgore** and **C.L.Bushey.** 1987. Guidelines for prescribed burning sagebrush-grass rangelands in the Great Basin. Gen. Tech. Rep. INT-231. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.
- **Bunting**, S.C. 1989. Effects of prescribed fire on rangeland shrubs in the intermountain region. *In* Prescribed fire in the intermountain region. Washington State University, Cooperative Extension, pp. 103-106.
- Conley, J. W. 1987. Sage grouse ecology. W-160-R-15, Subproject 9. Idaho Dept. Fish and Game. 63 pp.
- **Craighead, J.J.** 1977. A proposed delineation of critical grizzly bear habitat in the Yellowstone Region. Bear Bio. Assoc. Mono. No. 1. 22.
- **Einarsen, A.S.** 1948. The pronghorn antelope and its management. Wildl. Manage. Inst., Wash., D.C. 235 pp.
- **Fischer, W.C.** and **B.D. Clayton.** 1983. Fire ecology of Montana forest habitat types east of the Continental Divide. Gen. Tech. Rep. INT-141. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.
- Gates, R. J. 1983. Sage grouse, lagomorph, and pronghorn use of a sagebrush burn site on the Idaho National Engenieering Laboratory. M.S. thesis, Montana State Univ., Bozeman. 135 pp.

Gruell, G.E. 1983. Fire and vegetative trends in the Northern Rockies: Interpretation form 1871 - 1982 photographs. Gen. Tech. Rep. INT-158. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

Gruell, G.E. 1986. Prescribed fire opportunities in grasslands invaded by Doulgas-fir: State-of-the-art Guidelines. Gen. Tech. Rep. INT-198. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

Harniss, R.O. and R.B. Murray. 1973. 30 years of vegetal change following burning of sagebrush-grass range. J. Range Manage. 26:322-325.

Hatley, C. L., & J. MacMahon. 1980. Spider community organization: Seasonal variation and the role of vegetation architecture. Environ. Ent. 9, 632-639.

Hironaka, M.; M.A. Fosberg and A.H. Winward. 1983. Sagebrush-grass habitat types of Southern Idaho. Bull. 35. Moscow, ID. University of Idaho. Forest, Wildlife and Range Exp. Sta.

Hoover, R.L., C.E. Till, and S. Ogilvie. 1959. The antelope of Colorado. Colo. Dept. Fish, Game Tech. Bull. 4, Denver, Colo. 110 pp.

Hormay, August L. 1970. Principles of Rest-Rotation Grazing and Multiple-Use Land Management. U.S. Department of the Interior, Bureau of Land Management. U.S. Department of Agriculture, Forest Service.

Houston, D.B. 1973. Wildfires in Northern Yellowstone National Park. Ecology 54:1111-1117.

Howard, R. and L. Powers. 1973. Hawk of the desert. Animal Kingdom 76:24-27.

Johnson, U.M. 1969. Life expectancy of a sagebrush control in central Wyoming. J. Range Mange. 22:177-182.

Jones, J.R. and N.V. DeByle. 1985. Fire. *In* Aspen: ecology and management in the western United States. N.V. DeByle and R.P. Winokur, editors. Gen. Tech. Rep. RM-119. Fort Collins, CO. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

Klebenow, D. A. 1972. The habitat requirements of sage grouse and the role of fire in management. Tall Timbers Fire Ecol. Conf. 12:305-315.

Mueggler, W.F. 1976. Ecological role of fire in western woodland and range ecosystems. *In* Use of prescribed burning in western woodland and range ecosystems: A symposium. Logan, UT. Utah State University, College of Natural Resources.

Mueggler, W.F. and W.L. Stewart. 1980. Grassland and shrubland habitat types of Western Montana. Gen. Tech. Rep. INT-66. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

Mueggler, W.F. 1988. Aspen community types of the Intermountain Region. Gen. Tech. Rep. INT-250. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

Noste, N.V. and C.L. Bushey. 1987. Fire response of shrubs of dry forest habitat types in Montana and Idaho. Gen. Tech. Rep. INT-239. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

O'Gara, B.W. 1978. *Antilocapra americana* in Mammalian Species. No. 90 American Society Mammalogists. N.Y., N.Y.

Olendorff, R. 1973. The ecology of the nesting birds of prey of northeastern Colorado. U.S. Inter. Bio. Program. Tech. Report # 211. Natural Resources Ecology Lab, Colo. State Univ., Ft. Collins, Colo.

Parmenter, R. and J. **MacMahon**. 1983. Factors determining the abundance and distribution of rodents in a shrub-steppe ecosystem: the role of shrubs. Oecologia 59, 145-156.

Peterson, J. G. 1970. The food habits and summer distribution of juvenile sage grouse in central Montana. J. Wildl. Manage. 34:147-155.

Pfister, R.D.; B.L. Kovalichik; S.F. Arno and **R.C. Presby.** 1977. Forest habitat types of Montana. Gen. Tech. Rep. INT-34. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

Ryder, R. A. 1980. Effects of grazing on bird habitats. Workshop proceedings: Manage. of Western Forests and grasslands for nongame birds. USDA For. Serv. Gen. Tech. Rep. INT-86, pp. 51-66.

Shuster, W. C. 1977. Goshawk. Colo. Outdoors, 26:26-29.

Smith, D. G. and J. R. Murphy. 1973. Breeding ecology of raptors in the eastern Great Basin of Utah. Bringham Young Univ. Science Bull., Bio. Series 18:(3) 76 pp.

Snow, C. 1974. Habitat Management Series for unique or endangered species- Ferruginous Hawk USDI BLM Techn. Note #13, 23 pp.

Stroud, D. and K. Spence. 1990. Sage for wildlife. Wyoming Wildlife. Feb. 18-25.

Sturgis, D.L. 1975. (a). Hydrologic Relations on Undisturbed and Converted Big Sagebrush Lands: The Status of Our Knowledge. USDA Forest Service, Research Paper RM-140.

Sturgis, D.L. 1975. (b). Oversnow Runoff Events Affect Streamflow and Water Quality. In Snow Management on Great Plains Symposium, p. 105-117.

Sturgis, D.L. 1975. (c). Sediment Transport From Big Sagebrush Watersheds. Watershed Management Symposium, Logan, Ut., August, 1975. p. 728-738.

Sturgis, **D.L.** 1977. (a). Soil Moisture Response to Spraying Big Sagebrush: A Seven Year Study and Literature Interperation. USDA Forest Service, Research Paper RM-188.

Sturgis, D.L. 1977. (b). Snow Accumulation and Melt in Sprayed and Undisturbed Big Sagebrush Vegetation. USDA Forest Service Research Note RM-348.

Sturgis, **D.L.** 1978. Hydrologic Relationships of Sagebrush Lands. In The Sagebrush Ecosystem: A Symposium. April, 1978. p. 86-100.

Sturgis, D.L. 1980. Soil Water Withdrawal and Root Distribution Under Grubbed, Sprayed and Undisturbed Big Sagebrush Vegetation. Great Basin Naturalist, Volume 40, No. 2, p. 157-164.

Sturgis, D.L. 1983. Long-term Effects of Big Sagebrush Control on Vegetation and Soil Water. Journal of Range Management. Vol. 36, No. 6. p. 760-765.

Sturgis, D.L. 1986. (a). Snow Depth and Incidence of A Snowmold Disease on Mountain Big Sagebrush. Proceedings: Symposium on the Biology of Artemisia and Chryothamnus. July, 1984. Provo, Ut. p. 215-221.

Sturgis, D.L. 1986. (b). Responses of Vegetation and Ground Cover to Spraying a High Elevation, Big Sagebrush Watershed with 2,4-D. Journal of Range Management. Vol. 39 No. 2, March, 1986. p. 141-146.

Sturgis, D.L. 1987. Herbicide Effects on Properties of Mountain Big Sagebrush Soils After Fourteen Years. Soil Science Society of America Journal. Volume 51, No. 5. p. 1337-1343.

Sturgis, D.L. 1990. Personal Communication, May, 1990.

Sundstrum, C. 1968. Water consumption by pronghorn antelope and distribution related to water in Wyoming's Red Desert. Antelope States Workshop, Casper, Wyoming. 3:39-46.

Tisdale, E.W.; M. Hironaka and F.A. Fosberg. 1969. The sagebrush region in Idaho: A problem in range resource management. Bull 512. Moscow, ID. Univeristy of Idaho, Agricultural Exp. Sta.

Tisdale, E.W. and M. Hironaka. 1981. The sagebrush-grass region: A review of the ecological liturature. Bull. 33. Moscow, ID. University of Idaho. Forest, Wildlife and Range Exp. Sta.

U.S.D.A. Undated. Conserving Our Heritage. America's Biodiversity. U.S.D.A. Forest Service and Nature Conservancy.

U.S.D.A. Undated. Sensitive Plant Field Guide. U.S.D.A. Forest Service, Northern Region.

U.S.D.A. 1989. Caring for our Natural Community. Region 1 Threatened, Endangered, and Sensitive Species Program. U.S.D.A. Forest Service, Northern Region, Wildlife and Fisheries.

U.S. Forest Service. 1990. The Forest Service Program for Forest and Rangeland Resources: A Long-Term Strategic Plan.

U.S. Forest Service. 1985. Forest Service Manual 1970.

U.S. Forest Service. 1990. Forest Service Handbook 2209.11.

Wallestad, R.O.; J. G. Peterson, and R. L. Eng. 1975. Foods of adult sage grouse in central Montana. J. Wildl. Manage. 39:628-630.

Wallestad, R.O.; and P. Schladweiler. 1974. Breeding season movements and habitat selection of male sage grouse. J. Wildl. Manage. 38:634-636.

Wallestad, R. O. and D. Pyrah. 1974. Movement and nesting of sage grouse hens in central Montana. J. Wildl. Manage. 38:630-633.

Literature

Wambolt, C.L. and G.F. Payne. 1986. An 18-year comparison of control methods for Wyoming Big Sagebrush in southwestern Montana. J. Range Manage. 39:314-319.

White, C. and T. Thurow. 1985. Reproduction of Ferruginous Hawks exposed to controlled disturbance. The Condor 87:14-22.

Workman, J.P. 1986. Range Economics. Macmillan Publishing Company.

Young, R.P. 1983. Fire as a vegetation management tool in rangelands of the intermountain region. *In* Managing intermountain rangelands - Improvement of range and wildlife habitats: Proceedings of symposia: 1981 September 15-17; Twin Falls, ID; 1982 June 22-24; Elko, NV. Gen. Tech. Rep. INT-157. Ogden, UT. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

Zook, M. 1988. Personal Communication, Montana Natural Heritage Program.



GLOSSARY



A

AIRSHED A basic unit in which air quality is managed.

ALTERNATIVE One of several policies, plans, or projects proposed for decisionmaking.

ANALYSIS AREA

A grouping of homogeneous land areas, formed from the land and resource inventory data comprising the data base. Similarities are in terms of common capabilities to produce resources

and susceptibility to impacts. Analysis areas need not be contiguous areas of land.

ANIMAL UNIT MONTH

The quantity of forage required by one mature cow (1,000 pounds or the equivalent) for one

month.

В

BEST MANAGEMENT PRAC-TICES (BMPs)

The set of standards in the Forest Plan which, when applied during implementation of a project, ensures that water related beneficial uses are protected and that State water quality standards are met. BMP's can take several forms. Some are defined by State regulation or memoranda of understanding between the Forest Service and the States. Others are defined by the Forest interdisciplinary planning team for application to specific management areas; these are included as Management Area Standards in the appropriate management areas. A fourth kind, project level BMP's are based on site specific evaluation, and represent the most effective and practicable means of accomplishing the water quality and other goals of the specific area involved in the project. These project level BMP's can either supplement or replace the Forest Plan standards for specific projects.

BIG GAME

Those species of large mammals normally managed as a sport hunting resource.

BIOLOGICAL EVALUATION

An assessment required by the Endangered Species Act of 1973 to identify any threatened, endangered or sensitive species which is likely to be affected by a proposed management action, and to evaluate the potential effects of the proposed action on the species or their habitats.

C

CANOPY

The continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth, such as sagebrush.

COMPETITION

The more or less active demand by two or more organisms at the same time for some environmental resource (such as sunlight, water, or nutrients), in excess of the supply available, typically resulting in the ultimate elimination of the less effective organism.

CULTURAL RESOURCES

The physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) and conceptual content or context (as a setting for legendary, historic, or prehistoric events as a sacred area of native peoples, etc.) and of an area.

CUMULATIVE EFFECT

The impact on the environment which results from the incremental impact of the action when added to other actions. Cumulative impacts can also result from individually minor but collectively significant actions taking place over a period of time.

D

DEFERRED GRAZING SYSTEM A grazing system where all pastures within an allotment are utilized during a given year but some are deferred during all or part of a season to allow for nutrient storage or seed production.

DEVELOPED RECREATION Recreation that occurs where improvements enhance recreation opportunities and accommo-

date intensive recreation activities in a defined area.

DIRECT EFFECTS Effects on the environment which occur at the same time and place as the initial cause or

action.

DISPERSED RECREATION That portion of outdoor recreation use which occurs outside of developed sites in the unroaded

and roaded Forest environment i.e., hunting, backpacking and berry picking.

DISTURBANCE Any management activity that has the potential to accelerate erosion or mass movement.

Also, any other activity that may tend to disrupt the normal movement or habits of a particular

wildlife species.

DIVERSITY The distribution and abundance of different plant and animal communities and species within

an area.

Ε

EARLY SUCCESSIONAL COM-

MUNITIES

The plant community that develops immediately following the removal of existing vegetation

from an area.

ECOSYSTEM A complete, interacting system of organisms considered together with their environment (for

example; a marsh, a watershed, or a lake).

EFFECTS Physical, biological, social and economic results (expected or experienced) resulting from

natural events or management activities. Effects can be direct, indirect and/or cumulative.

ENDANGERED SPECIES Any species which is in danger of extinction throughout all or a significant portion of its range

and listed as such by the Secretary of the Interior in accordance with the Endangered Species

Act of 1973.

ENVIRONMENT The aggregate of physical, biological, economic, and social factors affecting organisms in an

area.

EPHEMERAL STREAMS Streams that flow only as a direct response to rainfall or snowmelt events. They have no

baseflow.

EROSION The wearing away of the land's surface by water, wind, ice, or other physical processes. It

includes detachment, transport, and deposition of soil or rock fragments.

F

FLOOD PLAIN Low land and relatively flat areas joining streams, rivers, and lakes which are periodically

inundated by over-bank flows of water.

FORAGE All browse and non-woody plants available to livestock or wildlife for feed.

FORB Any herbaceous (herb-like) plant other than grass or grass-like plants.

FUELS Living plants and dead, woody vegetation that are capable of burning.

HABITAT A place where a plant or animal naturally or normally lives and grows.

HABITAT TYPE An aggregation of all land areas potentially capable of producing similar plant communities

at climax.

INDICATOR SPECIES Species identified in a planning process that are used to monitor the effects of planned

management activities on viable populations of wildlife and fish including those that are socially

or economically important.

ISSUE A subject or question of widespread public discussion or interest regarding management of

National Forest System lands.

K

KEY WILDLIFE HABITAT COM-

PONENTS

Areas or features of the forest which are of particular importance for maintaining overall wildlife habitat. These areas and features include; moist areas, wallows, meadows, parks, critical

hiding cover, thermal cover, migration routes and staging areas.

KEY WINTER RANGE

An are, generally of low elevation, that big game annually need in order to survive during normal winters. This area encompasses the area used by the majority of animals in the

population during the winter (variable, but commonly between 12/1 and 4/1)

L

LAND ALLOCATION The assignment of a management emphasis to particular land areas to achieve the goals of

the issues, concerns, and opportunities identified in the planning process.

LANDTYPE An area of land classified on the basis of geomorphic attributes. This classification system is

based on an understanding of geologic processes (as reflected in land surface form and features), individual kinds of soil, and the factors which determine the behavior of ecosystems

(i.e., climate, vegetation, relief, parent materials, and time).

LEK A site where grouse traditionally gather for sexual display and courtship.

LONG-TERM EFFECTS Those effects which generally occur after the maximum 15 year life of the Forest Plan.

M

An aggregation of capability areas which have common management direction and may be MANAGEMENT AREA

noncontiguous in the Forest. It consists of a grouping of capability areas selected through evaluation procedures and used to locate decisions and resolve issues and concerns.

An issue, problem, or a condition which constrains the range of management practices identified MANAGEMENT CONCERN

by the Forest Service in the planning process.

A statement of multiple-use and other goals and objectives, the associated management MANAGEMENT DIRECTION

prescriptions and the associated standards and guidelines for attaining them.

Glossary

MANAGEMENT INDICATOR SPECIES (MIS)

A plant or animal which, by its presence in a certain location or situation, is believed to indicate the habitat conditions for many other species.

MANAGEMENT PRACTICE

A technique or procedure commonly applied to forest resources, resulting in measurable outputs or activities.

MANAGEMENT PRESCRIP-

Management practices and intensities selected and scheduled for application on a specific area to attain multiple use and other goals and objectives.

MITIGATION

Avoiding or minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact by preservation and maintenance operations during the life of the action.

MONITORING (OR EVALUATION)

An examination, on a sample basis of Forest Plan management practices, to determine how well objectives have been met and a determination of the effects of those management practices on the land and environment.

MULTIPLE USE

The management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people. The most judicious use of the land will be made for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions. Some lands will be used for less than all the resources. Management of the various resources will be harmonious and coordinated, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

N

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

An act to declare a National policy that will encourage productive and enjoyable harmony between man and his environment, to promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the Nation, and to establish a Council on Environmental Quality.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) PROCESS

An interdisciplinary process, mandated by the National Environmental Policy Act, which concentrates decisionmaking around issues, concerns, alternatives, and the effects of alternatives on the environment.

NATIONAL FOREST MANAGE-MENT ACT A law passed in 1976 as amendments to the Forest and Rangeland Renewable Resources Planning Act that requires the preparation of Regional and Forest plans and the preparation of regulations to guide that development.

NATIONAL FOREST SYSTEM

All National Forest lands reserved or withdrawn from the public domain of the United States; all National Forest lands acquired through purchase, exchange, donation, or other means; the National Grasslands and land utilization projects administered under Title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 U.S.C. 1010-1012); and other lands, waters, or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system.

NATIONAL REGISTER OF HISTORIC PLACES

A listing maintained by the National Park Service of areas which have been designated as being of historical value. The Register includes places of local and State significance as well as those of value to the Nation as a whole.

NEPA

See National Environmental Policy Act.

NFMA

See National Forest Management Act.

Glossary

NO ACTION ALTERNATIVE

An alternative where no activity would occur. The development of a No Action Alternative is requested by regulations implementing the National Environmental Policy Act (490 CFR 1502.14). The No Action Alternative provides a baseline for estimating the effects of other

alternatives.

NONGAME

Species of animals which are not managed as a sport hunting resource.

0

OBJECTIVE

A specified statement of measurable results to be achieved within a stated time period. Objectives reflect alternative mixes of all outputs or achievements which can be attained at a given budget level. Objectives may be expressed as a range of outputs.

P

PERENNIAL STREAM

A stream which normally flows throughout the year.

PERMITTED GRAZING

Use of a National Forest range allotment under the terms of a grazing permit.

PRESCRIBED BURNING

The intentional application of fire to wildland fuels in either their natural or modified state under such conditions as allow the fire to be confined to a predetermined area and at the same time to produce the intensity of heat and rate of spread required to further certain planned objectives (i.e. silviculture, wildlife management, etc.)

PRESCRIBED FIRE

A fire burning under specified conditions which will accomplish planned objectives in strict compliance with an approved plan and the conditions under which the burning takes place and the expected results are specific, predictable and measurable.

PRIMITIVE ROS CLASS (PRIM)

Area is characterized by an essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other area users is minimal. The area is managed to be essentially free from evidence of man-induced restrictions and controls. Motorized use within the area is not permitted.

PUBLIC INVOLVEMENT

A Forest Service process designed to broaden the information base upon which agency decisions are made by (1) informing the public about Forest Service activities, plans, and decisions, and (2) encouraging public understanding about and participation in the planning processes which lead to final decisionmaking.

PUBLIC ISSUE

A subject or question of widespread public interest relating to management of the National Forest System.

R

RANGE ALLOTMENT

A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.

RANGELAND

Land on which the climax vegetation (potential natural plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities. It also includes areas seeded to native or adapted introduced species that are managed like native vegetation.

Glossary

RECORD OF DECISION

A document separate from but associated with an environmental impact statement that publicly and officially discloses the responsible official's decision on the alternative assessed in the environmental impact statement chosen to implement.

RECREATION OPPORTUNITY SPECTRUM (ROS)

A system designed to inventory, analyze, and manage Forest recreation settings and opportunities. The system categorizes National Forest System land into six classes, each class being defined by its setting and by the probable recreation experience and activities it affords.

RESEARCH NATURAL AREA

An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and general public use is not allowed.

REST ROTATION GRAZING SYSTEM

A grazing system in which animals are moved from one pasture to another on a scheduled basis, with one pasture left ungrazed in a given year. The number of pastures used in the system will dictate how often a given pasture is rested.

RIPARIAN AREAS

Areas with distinctive resource values and characteristics that are comprised of aquatic and riparian ecosystems, 100 year flood plains and wetlands. They also include all upland areas within a horizontal distance of approximately 100 feet from the edge of perennial streams or other perennial water bodies.

ROADED MODIFIED ROS CLASS (RM) Area is characterized by a substantially modified natural environment where evidence of man's activities are readily apparent. Such activities are usually resource-based. Typical activities include timber harvest, mineral extraction, and livestock grazing. Such evidences may or may not harmonize with the natural environment. Interaction between users may be low to moderate, but evidence of other users prevails. Resource modification and utilization practices are readily evident and may dominate. Conventional motorized use is provided for in the construction standards and design of facilities.

ROADED NATURAL APPEAR-ING ROS CLASS (RNA) Area is characterized by a predominantly natural appearing environment with moderate evidences of the sights and sounds of man. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in the construction standards and design of facilities.

ROADLESS AREA

Undeveloped Federal land within which there are no improved roads or roads maintained for travel by means of motorized vehicles intended for highway use.

RURAL ROS CLASS (R)

Area is characterized by substantially modified natural environment.

S

SCOPING

The procedures by which the Forest Service determines the extent of analysis necessary for a proposed action, i.e., the range of actions, alternatives and impacts to be addressed, identification of significant issues related to a proposed action, and establishing the depth of environmental analysis, data, and task assignments needed.

SEDIMENT

Any material, carried in suspension by water, which will ultimately settle to the bottom of streams.

SEMI-PRIMITIVE MOTORIZED ROS CLASS (SPM)

Area is characterized by a predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other area users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is permitted.

Glossary

SEMI-PRIMITIVE NON-MOTORIZED ROS CLASS (SPNM)

Area is characterized by a predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is not permitted.

SENSITIVE SPECIES

Plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by; (1) significant current or predicted downward trends in population numbers or density, and (2) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

SMALL GAME

Birds and small mammals permitted for hunting or trapping.

STANDARD

An objective requiring a specific level of attainment; a rule to measure against; a guiding principle.

STREAM ORDER

A measure of the position of a stream in the hierarchy of tributaries (stream as referenced here refers to perennial streams).

a. First order streams are unbranched streams, that is they have no tributaries.

b. Second order streams are formed by the confluence of two or more first order streams. They are considered second order until they join another second order or larger stream. Third order streams are formed by the confluence of two or more second order streams. They are considered third order until they join another third order or larger stream.

SUCCESSIONAL STAGE

A phase in the gradual supplanting of one community of plants by another.

SUITABILITY

The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

T

THREATENED OR ENDAN-GERED SPECIES Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and one that has been designated as a threatened species in the Federal Register by the Secretary of Interior.

TOPOGRAPHY

The configuration of land surface including its relief, elevation, and the position of its natural and manmade figures.

W

WATERSHED

The total area above a given point on a stream that contributes water to the flow at that point.

WETLANDS

Areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances does support, a prevalence of vegetation or aquatic life that require saturated or seasonally saturated soil conditions for growth and reproduction.



LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS

To Whom Copies of the Statement Have Been Sent



List of Agencies, Organizations, and Persons to Whom Copies of the Statement Have Been Sent

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APPENDIX A



ECONOMIC EFFECTS

Changes Between Draft and Final

In the Draft EIS, the benefit value for livestock forage used in the economic performance calculations was figured at both \$1.86 per AUM and \$8.65 per AUM. These numbers represent, respectively, the administrative fee charged by the U.S. Government and the Consumer Surplus value of the forage as listed in the Recommended RPA Program for 1990. In the Final EIS, the Fair Market value was used as the benefit value for livestock forage, as specified by FSH 2209.11. This value is also listed in the RPA document, and, in 1990 dollars, is \$6.42 per AUM.

Purpose

The economic effects analysis was conducted to provide a comparison of the monetary costs and benefits associated with the forage production of each proposed alternative. It is intended to give the decision maker the assurance that economic effects were considered in the design of each alternative and the discretion to use this monetary cost/benefit information in the decision process. This analysis is not intended to evaluate the overall cost effectiveness of the grazing program in the area under consideration. That level of economic analysis is conducted during development of the Forest Plan.

Introduction

The EIS evaluates four alternatives for managing the forage production and habitat diversity through a systematic controlled burning program on approximately 30,240 acres of grassland/ sagebrush habitat in the Antelope Basin and West Fork Madison area of the Madison Ranger District of the Beaverhead National Forest. This appendix describes the analyses conducted on the economic effects of the alternatives relative to how they change current allotment conditions. Forage production was the only output that was considered in the economic analysis because there is no reliable quantitative data on the economic costs and benefits of changes in habitat diversity.

The economic analysis covered two phases of forage production that each of the alternatives go through. The first phase is the transition period where the land is brought from its current condition to its "steady state" future condition by the management activity of the alternative. (The steady state condition is defined as the point where the forage production remains constant from one year to the next.) Regardless of the alternative, it requires 15 years of consistent management practices to achieve a steady state in forage production. The present net value (PNV) is calculated for each alternative for this 15 year transition period to compare the economic performance of the alternatives during this phase.

The second phase analyzed is the steady state period where the costs and benefits in each alternative remain constant from year to year. The net value for a single year (undiscounted) is calculated for each alternative. This figure provides the value used to compare the economic performance of each alternative beyond the transition phase.

Economic Data and Assumption used in the Analysis

The following data and assumptions were used in the economic analysis:

The analysis was done using 1990 constant dollars.

Forage used by livestock has a value of \$6.42 per AUM based on the 1990 RPA Program listed estimate of Fair Market value adjusted to 1990 dollars.

An AUM (Animal Unit Month) equals 780 pounds of forage.

An estimated 14,185 AUMs (approximately 70% of the total allotments for the area) are used yearly by livestock on the 30,240 acres considered for prescribed burning management.

Livestock utilization of the forage will be limited to 50% or less of 75% of the total forage produced per year. Allotments will be decreased to meet this limitation where required. (Because of the rest-rotation grazing system currently used, 25% of the land--and its associated forage production--is not grazed each year. Livestock use will be limited to 50% on areas grazed.)

Forage production is 1700 pounds/acre on the early successional vegetation stage (1-10 years after burning), 1275 pounds/acre on the mid successional vegetation (11-15 years after burning), and 850 pounds/acre on the late successional vegetation (over 15 years after burning).

Allotments will not be increased above current levels, regardless of forage production levels.

Areas burned would average a mosaic of 50% burned and 50% unburned within the boundaries of the prescribed burn.

The prescribed burn area per year for each alternative is the proportional amount required to cover the total area in a complete cycle. (For example, on the 20 year burn cycle 1512 acres would be prescribed burned each year [30240 / 20 = 1512]. Actual acres blackened would average 706 acres per year because of the 50% burn mosaic.)

The cost per prescribed burn is \$5 per acre for the entire burn area. (From the above example, the burn cost is \$7560 per year [1512 * 5 = 7560]).

In the 10 year burn rotation where areas will be reburned before all the vegetation within an area reaches the late successional stage, the burn mosaic will be 50% land that was not burned during the previous burn cycle and 50% land that was burned during the last burn cycle.

The current vegetative condition is 16% (4840 acres) early successional, 3% (910 acres) mid successional, and 81% (24490 acres) late successional.

As specified in Forest Service Manual 1970, the discount rate used in calculating the present net value is 4%.

Economic Analysis of Alternatives During the Transition Phase

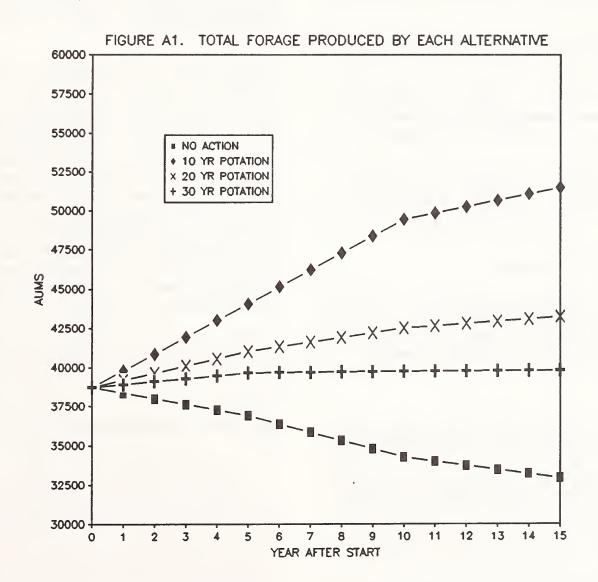
There were three steps involved in the economic analysis of the transition phase. The first step of this analysis consisted of determining the forage produced per year for each alternative. The second step was to calculate the PNV for each alternative based on the changes to the current costs and benefits of existing allotments. The last step consisted of a sensitivity analysis on the value of additional forage available after livestock useage.

DETERMINING FORAGE PRODUCTION

The amount of forage produced per year by alternative was calculated based on changes in the amount of early, mid, and late successional forage lands resulting from the management intensity of each alternative. This calculation was made by dividing the area into equal sized blocks of land, where the number of blocks per alternative equalled the rotation cycle, i.e., the 30 year alternative had 30 blocks of land. (The exception to this was the no action alternative, which could be handled in one unit.) The amount of land currently in the different forage successional stages was allocated to these blocks of land under the assumptions that the different successional stages could be isolated and had been created in a uniform pattern by past management practices.

For example, in the 30 year alternative the early successional forage was evenly distributed through 10 blocks of land, the mid successional forage was evenly distributed through another 5 blocks of land, and the remaining 15 blocks of land were late successional forage. (Both the early and mid successional blocks also had late successional forage acres as needed to account for all the acres in the block.) Each block of land was also assigned an age within its successional stage. The early successional stage blocks were years 1 through 10, the mid successional stage blocks were years 11 through 15, and the late successional stage blocks were years 16 through 30. The burning was conducted on the "oldest" blocks first, so the 30 year block was burned in the first year. Also in the first year, the 15 year block converted to a late successional block and the 10 year block

converted to a mid successional block. Based on the resulting changes in the acreage for each successional stage, the amount of forage produced was calculated for the year. This methodology was applied to each action alternative. (See the project folder for a detailed listing of the forage production data developed by this methodology for each alternative.) For the no action alternative the percent of land in the early and mid successional stages was proportionally decreased for 15 years, at which time all lands were in the late successional stage. Figure A1 displays the changes in forage production over time by alternative.



CALCULATION OF PRESENT NET VALUE

The calculation of the present net value (PNV) considered only the direct project costs and benefits that are in addition to the costs and benefits associated with the current grazing allotments. Specifically, only the burning costs and the decreases in allotment grazing caused by decreased forage production were factored into the

PNV calculation. (As stated in the Data and Assumptions section above, allotment use of forage would not increase even if forage production increased significantly.) While this may be considered a narrow view of the economic effects of the alternatives, it does focus the economics on the factors that can be reliably quantified. The sensitivity analysis described below addresses some

costs and benefits that cannot be as reliably quantified.

The PNVs for the alternatives are shown in Table A1 below. The economically preferred alternative is the 30 Year Rotation alternative, although the No Action alternative has essentially the same PNV value. (Refer to the project management file for a detailed listing of the PNV calculations.)

Table A1. Transition Phase PNV Values

Alternative	Burning Cost	AUM Fair Market Value
No Ac- tion 10 Yr Cycle 20 Yr Cycle 30 Yr Cycle	None -\$175,000 -\$87,000 -\$58,000	-\$59,000 No Change No Change No Change

SENSITIVITY ANALYSIS

Additional analysis was conducted to evaluate the effect of assigning a monetary value to the change in available forage remaining after allotment use. The following is a summary of the sensitivity analysis, refer to the project file for additional details.

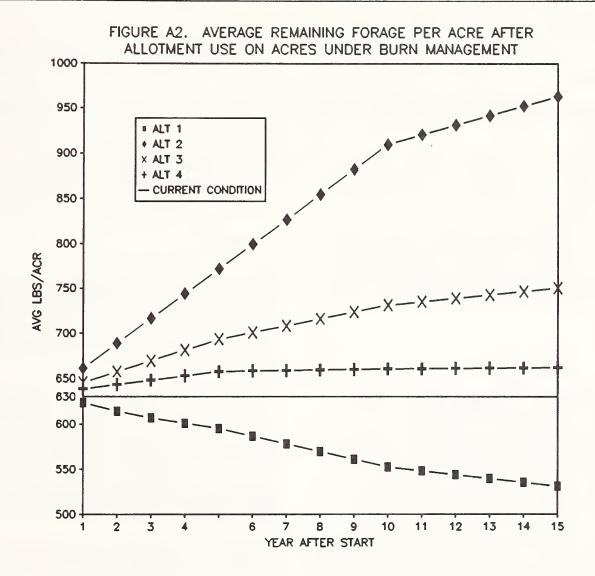
Each alternative, including the No Action alternative, will change the amount of forage remaining after allotment use from current levels. This change in remaining forage probably would impact other resources, such as wildlife habitat, soil stability, and watershed conditions, however, the "correct"

dollar value of this forage is unknown. So instead of trying to define a specific value for the remaining forage, this analysis determined the range of values for the remaining forage were each alternatives is economically preferred. The analysis considered only the increase or decrease in remaining forage from current conditions caused by the different alternatives. Figure A2 displays the change in remaining forage over time by alternative.

The analysis was conducted with the allotment forage set at \$6.42/AUM and the value of the remaining forage allowed to vary as needed to cause each alternative to become economically preferred. Also, since the three action alternatives have the same allotment use of 14185 AUMs, the determination of which is economically preferred based on the remaining forage is independent of the allotment AUM value. This means that the range of values shown below where each action alternative is preferred would be the same if the allotment AUM value was set above or below the current fair market value of \$6.42/AUM. Table A2 displays the results of this sensitivity analysis.

Table A2. Economically Preferred Alternative Based on Value of Remaining Forage

Preferred Alternative	Value of Remaining Forage (\$/AUM)	
No Action	Not Preferred	
30 Year Rotation	0.00 - 1.40	
20 Year Rotation	1.41 - 1.75	
10 Year Rotation	1.76 and Above	



Economic Analysis of Alternatives at the Steady State Phase

At the end of the 15 year transition phase, each alternative reaches a steady state of forage production and management costs. The economic analysis for this phase consisted of determining the net value for one year's worth of costs and benefits (undiscounted) to compare the performance of the alternatives where only the forage used in allotment AUMs is valued. Then, a sensitivity analysis was conducted on the value of the remaining forage to determine how those values

effect the determination of the economically preferred alternative.

CALCULATION OF NET VALUE

The net value for each alternative was calculated by determining the average yearly cost of burning for the action alternatives, and the foregone benefits (treated as a cost) of the reduced forage production of the No Action alternative. Table A3 shows the results.

Table A3. Steady State Phase Net Values

Alternative	Burning Costs	AUM Fair Market Value
No Ac- tion	None	-\$12,000
10 Yr Cycle 20 Yr Cycle 30 Yr Cycle	-\$15,000 -\$8,000 -\$5,000	No Change No Change No Change

As was the case in the transition phase analysis, the 30 Year Rotation alternative is economically preferred. The 20 Year Rotation alternative would cost and additional \$3,000 dollars a year, and so on.

SENSITIVITY ANALYSIS

This analysis was conducted to determine how changes to the value of the forage remaining after allotment use effects the determination of the economically preferred alternative. The analysis considered only the increase or decrease in remaining forage from current conditions caused by the different alternatives. The value of the remaining forage was allowed to vary so that each alternative was economically preferred, for the same reasons stated in the sensitivity analysis of the transition phase. Table A4 displays the results of the sensitivity analysis.

Table A4. Economically Preferred Alternative Based on Value of Remaining Forage

Preferred Alternative	Value of Remaining Forage (\$/AUM)	
No Action	Not Preferred	
30 Year Rotation	0.00 - 0.73	
20 Year Rotation	0.74 - 0.92	
10 Year Rotation	0.93 and Above	

Conclusions

The 30 Year Rotation Alternative is economically preferred in both the transition and steady state phases of the proposed management. If a value is placed on the forage remaining after allotment use, one of the other action alternatives may becomes economically preferred.

The determination of which action alternative becomes economically preferred depends on the value associated with the forage remaining after allotment use, since they all maintain the current allotment stocking level. In the sensitivity analysis done above, a range of values was given for this forage where each action alternative was economically preferred.

Another way of looking at the value of the additional remaining forage would be to evaluate the need to increase the amount of forage above what currently remains after allotment use. If the current condition is good, then the 30 Year Rotation alternative is preferred since it essentially maintains the current condition (the average increase in remaining forage is about 20 pounds per acre). If additional forage is desired, then the 20 Year Rotation alternative will supply about 100 pounds of additional forage per acre, while the 10 Year Rotation will supply over 300 pounds of additional forage per acre.

Literature Cited

Workman, John P. 1986, Range Economics, Macmillan Publishing Company.

- **U. S. Forest Service.** 1990, The Forest Service Program for Forest and Rangeland Resources: A long-Term Strategic Plan.
- U. S. Forest Service. 1985, Forest Service Manual 1970.
- U. S. Forest Service. 1990, Forest Service Handbook 2209.11.



APPENDIX B



Biological Assessment - Threatened and Endangered Species

GRAVELLY SAGEBRUSH FEIS

A. Situation Description

A preferred alternative has been selected by the U.S. Forest Service in its draft Environmental Impact Statement for burning sagebrush in the Gravelly Mountains on Madison District. The proposal is to prescribe burn approximately 1512 acres every year in the West Fork and Antelope Basin areas. This acreage will be made up of several individual burn units distributed over the area. Size of the units varies from 20 to 625 acres. On an average, each of the burn units would contain a mosaic of approximately 50% burned and 50% unburned resulting in an average of approximately 756 of the 1512 acres actually blackened.

The burns would take one or two days to complete each spring or fall. There would be up to three trucks involved in transporting workers to complete the burn. Burns would be done on the ground by hand. Noise level would be insignificant.

The average acres to be burned in this proposal is very similar to the past 5 year average burned for the area. This alternative differs from current management in the following ways: The 50% mosaic is a less intense burn than has been previously done. Average burn has been closer to 60% of total consumption of the vegetation in the unit. The main difference in this proposal is the presence of a plan to put the burn units into a systematic 20 year cycle. This allows for better analysis of cumulative impacts.

B. Geographic Description and Background

The affected area includes the 161,170 acres of land found in the West Fork/Antelope Basin area. The land is in Madison and Beaverhead counties in southwest Montana. The area includes Standard Creek and the Chain of Lakes; Elk Lake to Smith.

The elevations range from 6,000 feet to 10,000 feet on the Gravelly crest. The topography of the area is varied and diverse. There are high open plateaus, mesas and rough rocky mountainous terrain, large open valley bottoms and high flat benches and open basins. The vegetation runs from grassland and wet meadows to sagebrush/ grass slopes, to willow and aspen stands, to open conifer/grass stands to dense coniferous forests. The proposed action is confined to the 42,168 acres of sagebrush/grass stands vegetation. Lesser areas of open conifer/grass and aspen are also proposed to be treated.

For the purposes of this evaluation, the effects are considered for the T&E species found within the entire Gravellies.

C. Species of Concern

In a letter to the District Ranger on September 14, 1990, the U.S. Fish and Wildlife Service identified four species that should be considered in the Biological Evaluation. These include: the threatened grizzly bear, the endangered grey wolf, bald eagle, and peregrine falcon. In addition to these species, sensitive species as identified by the Regional Forester are evaluated for their predicted responses to the proposed action.

Grizzly bear

None of the Gravellies are within any Grizzly Bear Recovery area. The nearest recovery areas are the east side of the Madison drainage north of the Wedge near Indian Creek and in Idaho on the Targhee National Forest.

The Gravelly mountains have had grizzly bear sightings nearly every year however. As of November, 1990 there have been 29 confirmed grizzly bear sightings within the Gravelly Mountains. In addition, there are numerous sightings which have been unconfirmed.

Grizzly bears have been occasionally reported near Wade Lake and one reported just south of Antelope Basin in 1987. In 1990, a grizzly bear was found in the Granite Mountain area and a grizzly was also seen at Cliff Lake and later in the summer in the campgrounds of Cliff and Wade Lake.

This area has not been analyzed through the grizzly bear habitat process, but it appears that the Cliff Lake Natural Area, Elk River, Deer and Elk Mountain, and Red Rock Mountain areas have the potential to hold bears for at least part of the year. Conflicts with grazing and the transportation system probably are the limiting factors for the grizzly bear in these areas.

Based on the number of sightings, I feel we have at least a remnant population within this mountain range. The Gravellies are therefore all considered to be occupied grizzly bear habitat.

The diet for grizzly bears in this area include forbs, sedges, grasses, roots, berries, and pine nuts. They also eat fish, ground squirrels and other rodents, ungulates, carrion, and insects. In the spring grasses, forbs are the dominate food items in this area. In the fall, forbs, sedges, berries, pine nuts and insects become more important.

There has been one grizzly bear mortality on the district in recent years. Grizzly bear #121 was trapped on July 28, 1986 (his 3rd trapping in 2 years) near Black Butte. The bear, a 6 year old boar, had reportedly been killing sheep prior to each of his 3 trappings. After the 3rd trapping, he was transported to Bozeman where he was to be moved to the Flathead National Forest for release the following day. While examining the bear in Bozeman, state officials determined the bear had badly damaged teeth. State Fish and Wildlife officials feared the bear might be a threat to humans and therefore killed the bear.

Grey wolf

Wolf have been regularly reported in the Gravelly and Tobacco Root ranges, the last report 2 years ago on the Madison district side. A total of 180 sightings have been reported on the Beaverhead since 1964. None of the sighting can be considered as confirmed. Most sightings have been one or two animals, with young rarely seen. No pack activity has been reported, so the population is

low (if they are present at all) with at most a few individuals scattered in the Gravellies.

The main source of biomass in their diet come from the large ungulates, primarily elk, deer, moose. Smaller mammals such as rabbits and ground squirrels make up a small part of their diet.

Bald Eagle

The bald eagle is a resident in the Gravelly mountains, nesting along the east side near the Madison River and the Chain of Lakes area. The bird also nests in the Centennial Valley at Lima Reservoir and at Red Rocks Wildlife Refuge.

Bald eagles nest on the Chain of Lakes and do feed to some extent in the areas proposed for burning. Studies made during 1989 and 1990 indicate that early in the summer, eagles will occasionally hunt to the east of Elk lake (an area which was burned in 1986) and to the east of Hidden Lake. These areas are classified as Zone 3 (home range) for the birds nesting at Hidden and Elk Lake. There is a burn unit on the west side of Elk lake which is within 1/2 mile from the Elk Lake nest. This burn unit is named Elk Lake #5.

The Antelope Prong and Neely's arm of Cliff lake are important fishing areas for both nesting and immature eagles during the spring rainbow and sucker spawning runs.

In the Chain of Lakes area, fish are the primary food source with ducks and muskrats of seasonal importance. Ground squirrels have only sporadically been observed to have been taken.

Peregrine falcon

Peregrine falcons nest in the Centennial Valley though there are no known nest sites in the Gravellies. The basic habitat requirements of peregrine falcons, namely large cliffs with ledges or potholes for nesting, is present along the West Fork of the Madison and along the Chain of Lakes area. Field surveys in 1989 and 1990 failed to locate any falcons nesting there though several falcons have been seen near Cliff Lake. There is a

strong likelihood that these birds will be nesting on the forest in the next few years.

Present prey species for the peregrines include: swallows, swifts, waterfowl, and a variety of passerines. Mammal populations are not important for the peregrines.

Sensitive wildlife species that may be in the area include the trumpeter swan, boreal owl, harlequin duck, ferruginous hawk, and the western big-eared and spotted bats.

Trumpeter swan

Trumpeter swan, a sensitive species, nests on Elk lake (2 historical nest sites) and have historically also nested on Goose Lake. Swans will winter on the south end of Cliff Lake until the lake totally freezes up. Conklin Lake, a privately owned lake in Antelope Basin, has consistently had a pair of swans nesting on it every year. In 1990, 4 young were hatched from their nest on the west end of the lake, and 2 birds fledged. Their activities are completely restricted to the lake until after fledging. There are 2 burn units within 200 yards of the 1990 nest site. (The units are named Conklin Pothole #4 and Conklin Sheepfield #3.)

Boreal Owl

Boreal owl probably are present in the upper elevations though none have been found. The birds typically are found in old growth lodgepole or spruce. This habitat preference separates them from any of the proposed burns.

Harlequin duck

Harlequin duck is not known to have ever been present in Gravellies. Their preference for large fast moving streams make it unlikely that any harlequins have ever been present in the area. (Recent research has questioned this apparent preference though undisturbed streams of at least 6 feet in width still seem to be preferred.)

Ferruginous hawk

Ferruginous hawk are present in the West Fork and are fairly common. No nests have been found in the analysis area however. They are known to be nesting in the sagebrush dominated hillsides just south of the upper end of the West Fork allotment in the Centennial Valley. Lagomorphs are the most common prey and comprise most of the bird's prey biomass. Nesting preference is for trees in shrubland/grassland habitat though they will nest in stream bottoms or on the ground where trees are not available.

Western big-eared and spotted bats

Western big-eared bat and spotted bats are 2 species which there is not much data gathered on, either here or elsewhere. Spotted bat appears to be an arid dwelling mammal which may be present in the southern Gravellies but they have never been observed. Potential roosting habitat would be in the potholes and cracks in the cliffs along the Chain of Lakes. Spotted bats apparently tend to feed and roost individually unlike most other species of bats which have communal roosts. Consequently, no one roost is of major importance. Western big-eared bat is likewise unknown as to its presence in the Gravellies. Red Rock Refuge personnel do not have any records of these 2 bats being within the refuge. This species has communal roosts, often in caves or mine shafts where a group of bats could roost together from the open ceiling, not in cracks or crevices like other bat species. None of the bats which have been seen while exploring caves or old mines exhibited this behavior of roosting from the ceiling. Consequently, the bats which have been seen are believed to be a different species. There appears to be little overlap between these bats and the proposed project.

D. Project Effect Analysis

The guidelines listed in the Greater Yellowstone Grizzly Bear Recovery Plan do not cover the Gravellies as it is outside all recovery areas. However, endangered and threatened species are protected regardless of where they occur. If a

grizzly bear occurs outside a recovery area, provisions must be made to protect it from harm and harassment, although management of habitat for grizzlies is not necessary. Because the grizzly bear is a threatened species, it is protected under the restrictions listed in the Endangered Species Act of 1973.

The Draft revised recovery plan covers this point. "It is recognized that grizzly bears will occasionally move and even reside permanently in areas outside the recovery zone. As long as the species remains listed as threatened in the adjacent ecosystem, any bears outside the recovery zone are protected by Federal statute against illegal killing. Management efforts such as pursuit and capture will not be directed against grizzly bears outside the recovery zone if such bears do not come into conflict with people or domestic livestock. It is recognized that such areas are not primarily managed for grizzly bear use. Bears that come into conflict with man under the nuisance bear criteria in the Guidelines (1986) outside the recovery zone will be captured and relocated into the recovery zone under the Guidelines. Removal of nuisance bears outside the recovery zone by authorized agency action is necessarily more lenient than within the recovery zone." (U.S. Fish and Wildlife Service 1990).

Prescribe burning has minimal impact on the grizzly or its habitat. It is not likely to increase the possibility of conflict between the bear and people. The vegetation change which would occur as a result of the proposed level of burning is not likely to impact feeding by the bears in any significant way. There will be a shift of herbaceous plants towards the forbs, rhizomatous and coarse leaved bunchgrasses and a decrease in annuals and fine leaved bunchgrasses. This flush of new growth generally remains high for the first few years after treatment. These plants are highly palatable to grazing animals. The resulting vegetation composition would actually be composed of more plants of the species which grizzly bears prefer (forbs and rhizomatous plants). The impact of this temporary vegetation change will be minimal to grizzly bear however. They may be attracted to the burns in the spring but the benefits are not significant.

During the burning, there might be some displacement for the day or two that it takes to complete the burn but again this displacement is very local in nature and insignificant.

Fire scars in timbered areas in southwest Montana including Yellowstone National Park have shown fire frequency to be approximately 20 to 45 years. Fire frequency within the adjacent sagebrush/ grasslands may be even shorter. Given this, a fire frequency of 20 years is not a significant divergence from the natural burning cycle, a cycle which the local population of bears has been able to live with.

While confirmed wolf sightings are not present on either district, the possibility exists of their presence. Burning will not significantly affect on what few wolves that may be present. The possibility of temporary displacement from the burn area resulting from the day or two of burning is very local, is unlikely, and therefore insignificant.

The change in vegetation on the acres treated will alter the distribution of some potential prey species for the wolf and the other T&E species, but this shift plus any small population change of small mammal prey species is not significant. Because the prey base is not likely to significantly change, and the disturbance is minor, the impacts of this prescribe burning is not likely to adversely affect the wolf.

Bald eagles could be affected by the proposed activity. A mitigation measures has been listed in the EIS to avoid disturbance during spring by requiring the proposed burning of the sage in Elk Lake Burn Unit #5 to be a fall burn to reduce disturbance to the Elk Lake nesting pair.

The burning of the unit at Antelope Prong called North Penninsula Unit 1 will result in displacement of the eagles feeding on the spawning fish for the day of the burn. The unit is small, only 65 acres and the burn can be accomplished in only a few hours. This temporary displacement does not jeopardize the eagles as they will move to Cliff Lake or to the other spawning grounds on Horn Creek and Lost Mine Canyon Creek. Similar displacement has been observed during the past

2 years as a result of other activities at this site and is not considered significant.

Bald eagles during fall are likely to avoid the burn area during the day or two that burning takes place but this displacement is local in nature and does not adversely affect the eagle. The minor change in small mammals as a result of the burn is not likely to affect the eagle.

There is no anticipated impact on peregrine falcons from this proposed project. The only possible exception would be if a pair decides to nest near one of the burn units. Every year, a nesting survey is done. If a nest is found, then a mitigation measure of no spring burning within one mile would need to be put into place. Peregrine falcons use the sagebrush areas only incidentally and there would be no significant reduction in prey base which could impact them indirectly.

Trumpeter swans could be affected unless the mitigation measures as listed are used. Because of the close proximity of the Conklin nest to Burn Units Conklin Sheepfield #3 and Conlkin Pothole #4, the burning in these units would need to be deferred to fall when the disturbance would be minimal. If this mitigation measure is followed, there will be no affect to the trumpeter swans.

Ferruginous hawks are very susceptible to abandonment if disturbed even minutely during egg laying and incubation (Olendorff 1973). A prescribe burn taking place within sight of the nest could

easily cause desertion. Howard and Powers (1973) and Smith and Murphy (1973) all verify this tendency to abandon nests even from a disturbance as small as one visit by researchers from a distance. Snow (1974) recommended limiting or prohibiting human access to within 300 yards of the nests during the incubation period. Ferruginous hawk could be impacted by the alternatives through disturbance during nesting. The units west of Patchtop Mountain in the West Fork of Madison River have the highest likelihood of having nests nearby. In order to reduce the chance of impacting a nest, a survey prior to any burning would need to be made. Any burn unit within 300 yards of a nest would be deferred to burning in the fall. If this mitigation measure is followed, there will be no affect on ferruginous hawk. The burning is not likely to significantly alter the rabbit population if a 50% burn is achieved as planned. Consequently, there is no anticipated affect on the ferruginous hawk regarding their prey base.

Boreal owl, harlequin ducks, spotted bat and western big-eared bat should not be impacted in any way by the burning. There is no habitat overlap between their needs and the areas considered for burning. There will be no affect for these species.

In summary, based on the project as designed with the incorporated mitigation measures, the affects on the T&E species and sensitive species are insignificant and discountable and are not likely to adversely affect these species.

REFERENCES CITED

Howard, R. and L. Powers. 1973. Hawk of the desert. Animal Kingdom. 76(3):24-27.

Olendorff, R.R. 1973. The ecology of the nesting birds of prey of northeast Colorado. U.S. IBP Tech. Rep. No. 211, 233 pp.

Smith, D.G. and J. R. Murphy. 1973. Breeding ecology of raptors in the eastern Great Basin of Utah. BYU Science Bull., Bio. Series 18(3):76 pp.

Snow, C. 1974. Habitat Management Series for unique or endangered species- Ferruginous Hawk. U.S. Dept. Interior Tech. Note Series No. 13, 23 pp.

U. S Fish and Wildlife Service 1990. Draft Grizzly Bear Recovery Plan. U.S. Fish and Wildlife Service. Missoula, Mont. 117 pp.

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